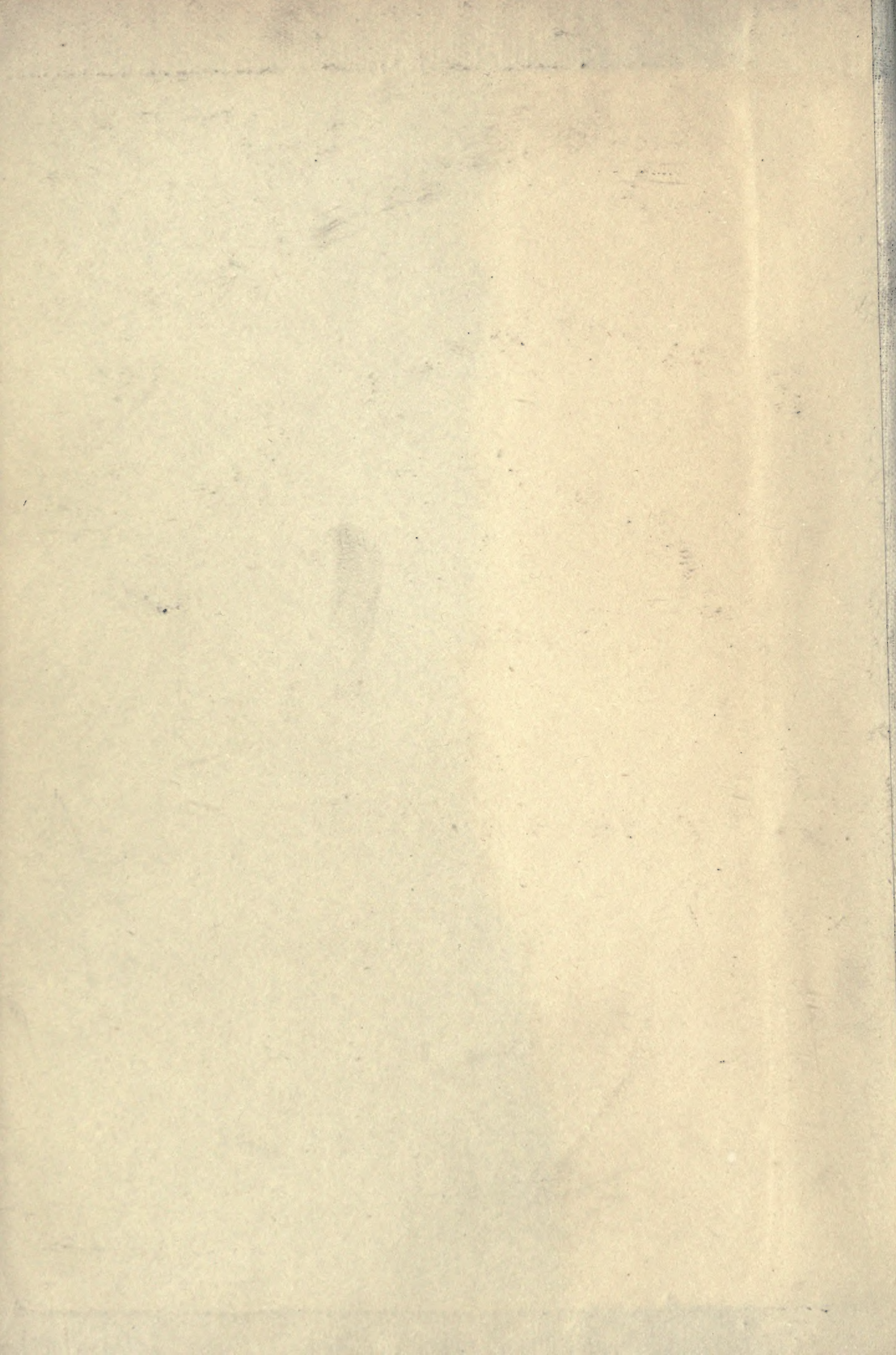


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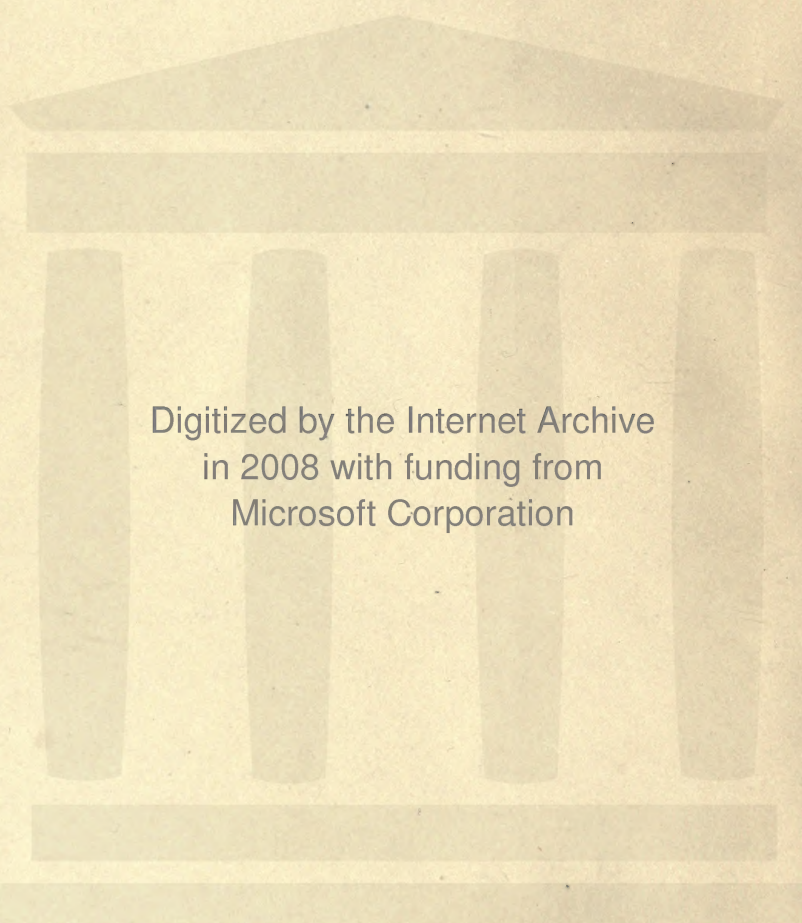






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Vol. III

JANUARY, 1922

No. 1

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# INTERNATIONAL MEDICAL DIGEST

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## SECTION ON GENERAL MEDICINE

HERNANDEZ, J. O.: **Mercurial Poisoning** (Envenenamiento Mercurial). *Vida Nueva*, September, 1921, xiii, No. 9, p. 223.

Bichlorid of mercury intoxications are especially frequent in gynecological and obstetrical practice. Often ignorance of the patient will cause wrong dosage, and consequences are fatal. The symptoms are acid intoxication and nitrogen retention. The most efficacious treatment is by alkalies, hydrocarbonates, diuretics and cathartics.

The symptoms of bichlorid of mercury poisoning consist mainly of edema of the various organs of the body, even of the brain, and always are in direct relation to the kidney function. According to Kahn, Andrews, and Anderson, the metal is found in all tissues of the body. MacNider had demonstrated, by experiment, that there is a relation between the symptoms of acid intoxication and the intensity of the case. In the later stage, necrosis of the tubuli and fatty infiltration of the ascending rami and of the loops of Henle, are in the foreground. There is a decrease of blood alkali, and therefore the alkali administration will hinder degeneration of the tubuli. Sansum has shown that administration of glucose and Fischer's saline solution, have no effect on the intoxication.

The author has treated 4 cases by the Weise, the Lewis, and Rivers, Lambert and Patterson method. All four were healed. The object of treatment is to hinder absorption of the toxin to avoid kidney lesions and to combat acidosis and nitrogen retention. It is necessary to know when the toxin has been absorbed, and when the



last food has been taken. If the poison has been taken after meals, absorption is not so rapid. Gastric evacuation and lavage may reduce the danger. If the poison has been introduced into the vagina, absorption is slow and the efforts must be concentrated on this part of the body. For the evacuation of the stomach, 10 per cent bicarbonate and 5 per cent sulphate of magnesia was used in solution. Before removing the tube, it is advisable to give 40 grams (617.28 grains) of calcium magnesia and 10 grams (154.32 grains) of bicarbonate of sodium, to be retained in the stomach. Several hours later, bicarbonate is repeated several times a day, in the form of "potus imperialis". In some cases, bitartrate of potassium, 2 grams of citrate of sodium, 4 grams of grape sugar, and 6 or 8 ounces of water, may be beneficial. The patients have an extreme alkali tolerance. Fischer's solution will increase elimination of the kidneys. To reduce acidosis and nitrogen retention, bicarbonate and glucose is given by the intestine. Intravenous injections of Fischer's solution are made: carbonate of sodium 4.5, chlorate of sodium 15, water 1,000. Four to five hundred grams of this solution are injected.

The author adds the blood analysis of one of the patients:

Hemoglobin .....	60
Hematin .....	3,912,500 x mm. c.
Leukocytes .....	6,250 x mm. c.
Globular value .....	1,002
Relation of hematin and leukocytes ..	1,627

*Variation of Leukocytes*

Lymphocytes .....	24-00%
Monuclears, medium .....	0-00
Monuclears, large .....	1-00
Monuclears, transitory .....	5-00
Polynucleo-neutrophils .....	75-00
Polynucleo-eosinophils .....	0-00
Polynucleo-basophils .....	5-00

KNOWLTON, F. P.: A Review of Carbohydrate Metabolism as Related to Diabetes. *New York Medical Journal*, 1921, xciii, 591.

A persistent hyperglycemia without glycosuria can only be explained on the basis of impaired kidney function. The ability of



the organism then, to utilize completely the carbohydrate of the food depends partly upon the rate of absorption, and partly upon the rate at which the tissues can remove the absorbed glucose from the blood. When the rate of intake at any time exceeds the ability of the body to oxidize or store it, hyperglycemia results, usually with glycosuria. The maximum amount which the body can dispose of within a given time without glycosuria is called the assimilation limit or tolerance of the individual for carbohydrates. The assimilation limit varies for different carbohydrates, depending chiefly upon the rate at which they are absorbed. With normal individuals there is no assimilation limit for starches and often none for saccharose except the ability of the individual to eat, digest and absorb. The necessity for digestion so slows absorption that its rate does not rise above the glycogen storing powers of the tissues. Even for dextrose which requires no preliminary digestion there is no limit for many healthy adult males. Clinically, when the ingestion of 100 grams of glucose on an empty stomach causes hyperglycemia and glycosuria the individual is considered as at least potentially a diabetic.

ROSE, R. H.: **Acid Gastritis.** *New York Medical Journal*, January 1, 1921, cxiii, No. 1, p. 12.

Acid gastritis is due to same causes as hyperchlorhydia, which it may follow,—seasonings, spices, acids, coffee, alcohol, tobacco, irregular or rapid eating, overwork, worry, violent exertion. It may also be secondary to chronic appendicitis, gall-stones, etc. Infections of more or less severe grades, are, in the author's opinion, secondary to these causes. Germs from the nose and throat are then a factor.

The symptoms are increased appetite; in other conditions the appetite is diminished; and it should put you on your guard that if the appetite is diminished it is due to some other complicating disease. Taste is sour, and is constant. There is heartburn in esophagus or stomach either regularly one or two hours after meals, or when food has been taken which does not agree. Pain occurs and may be slight to severe, sometimes a burning pain, at others sharp enough to be knife-like, simulating gall-stone when accompanied by a spasm of the muscles of the cardia or pylorus. Nausea and vomiting are present and there is a great deal of mucus if the case is severe.



Diet is important and may be chosen from the following articles:

*Fats.*—Butter, cream, olive oil and crisp bacon.

*Carbohydrates.*—Small amount of sugar, toast, whole wheat and graham breads, corn bread and muffins (made with especial care so as to be light), plain soda crackers, unsweetened whole wheat or graham crackers, baked or well-mashed potatoes, baked sweet potatoes, cereals well-cooked, or dry cereals heated, simply prepared tapioca, lettuce, celery, romaine, spinach, string beans, lima beans, tender peas, butter beets.

*Proteins.*—Roast beef or lamb, broiled steak, broiled lamb or mutton chops, tender veal, fresh fish, chicken and turkey. Milk; cream, American, brie, Camembert, cheddar, Swiss, McClarne's, yellow and unsnappy cheese. Eggs either poached, coddled, scrambled, soft boiled or boiled for thirty minutes. No pepper, mint sauce, hot seasoning, onion, garlic and only a moderate amount of salt should be used in the preparation of proteins.

*Drinks.*—In addition to milk, a moderate amount of weak tea, cocoa (not too sweet), plain water, or alkaline waters are harmless. In severe cases a diet as for mild ulcer is necessary.

*Drugs.*—These include antacids as equal parts of calcined magnesia and sodium bicarbonate, given in doses of a quarter to one-half teaspoonful a half hour to one hour after meals and repeated two hours later, making six doses a day. If this is too laxative, bismuth may be substituted in the formula in place of calcined magnesia.

Lavage in case of large amounts of mucus, first with soda and then with a weak solution of silver nitrate from three to seven times a week when stomach is empty, is very effective and rapid improvement is to be expected. The solution silver nitrate should be but one to twenty thousand, gradually increased, seldom more concentrated than one to eight thousand. If difficult to use lavage, one-eighth to one-quarter grain of silver nitrate in a glass of water one-half hour before meals may suffice, but it should not be continued for more than three or four weeks.

CARTIN, H. J.: *Acrodynia*. *Pennsylvania Medical Journal*, 1921, xxiv, 287.

Little is known of the etiology of acrodynia. Brocq claims it to be a metallic poisoning; Goldberg a deficiency disease related to pel-



lagra; Byfield takes the stand that the affection is probably of influenzal origin; Weston claims it is due to an undetermined bacteria. The five cases observed by the author were of varying severity, presenting all, or nearly all of the following symptoms; an eruption, papular, lying in an erythematous base, at times macular; photophobia; paresthesia and irritability; burrowing of the head; chewing of fingers and hands; profuse nasal discharge; apathy; lack of appetite; leukocytosis, pigmented spots, scanty urine. The five cases are reported.

The first was a female aged 4. History showed influenza in whole family. Three months before she had a slight attack and did not entirely recover. Three weeks before admission it was noticed that she was more irritable and wanted to be in bed. Light seemed to cause her to burrow her head to protect her eyes, which were inflamed. One week later a rash appeared on legs and arms. On examination the feet and hands were cold and bluish in color. The rash had the appearance of fading scarlet fever. She complained of pain in hands and feet. She scratched her body until many abscesses appeared. She did not vomit and would not eat. She always wanted her feet placed on pillows. The urine was normal except for a slight trace of albumin. The temperature ranged from 99.5° F. to 101° F. (37.5° C. to 38.33° C.). The leukocyte count was 12,000. The Wassermann was negative. The patient remained in the hospital during which time her condition improved but little. Later her father reported her to be cured after a slow convalescence.

The third case was of an Italian boy of 4 years. He had been breast-fed but had been very irritable until 6 months old. He was always well until May, 1919, when he began to lie around, but did not sleep, was restless at night, and had no appetite. In September a rash appeared, first on arms and legs. It was papular on an erythematous base. Two weeks later bullæ appeared on the buttocks and abdomen, which, when broken, discharged pus profusely. He had pain on voiding. At this time, he had pain, he said, in his fingers. During these attacks he chewed his hands at the base of the thumbs. Two teeth were broken off in one of these seizures of pain. Examination on admission showed a profuse discharge from the nose, the eyes were inflamed, pigmented spots were over trunk and back where the bullæ had first appeared. He had lost the outer half of the ring finger of the left hand, the same amount of the little finger of the



left hand, the middle toe of the right foot and one-half of the great toe of the left foot. The mother stated that they had become black and dropped off. The boy had experienced no pain at these times. The stumps were all healed. While in the hospital he would burrow under the bedcovers and remain there constantly unless disturbed. His hair came out in large quantities. His teeth became loose. Gangrene developed in the ring finger of the left hand and the finger dropped off. Later as a result of infection the little finger of the left hand was amputated. The x-ray showed no necrosis of hands or feet. The urine showed slight traces of albumin, and a few hyalin and granular casts. The leukocyte count was 15,920. His family physician reported on Oct. 1, 1920, that the boy had made a complete recovery. The author endeavored to force feeding, but did not use lavage. For the itching he tried various ointments, hot baths and hot applications. For the pains he used codein phosphate. No treatment seemed to be of any benefit. There were no deaths but convalescence was very slow.

ANSPACH, B. M.: **Headache in Dysmenorrhea.** *Gynecology*, Lip-pencott & Co., Philadelphia and London, 1921, p. 99.

The belief that physiologic and pathologic states of the female generative organs often produce headache is widespread. Text-books mention dysmenorrhea, "uterine disease", and diseases of the ovaries and even of the bladder as causes of headache, but no justification for this belief has yet been attempted. Headache is, of course, exceedingly common during menstruation, but so it is in eclampsia, although no one today would connect the eclamptic headache in any direct way with the condition of the uterus. Toxemia of the puerperium and toxemia of the menstrual period constitute a much more possible though not a demonstrable hypothesis. Cabot lists 13 gynecologic conditions as the etiologic factors in headache. In only two, dysmenorrhea and antelexion, were headache, backache and other hysteric or neurasthenic symptoms present more often than they were absent. In 181 cases in which the pelvic organs were normal the headache, backache, etc., were present. For instance, in retroposition, headache, backache, etc., were absent in 44 cases, and present in 36.



GUILLAIN, G.: **Compression of the Spinal Cord in a Case of Recklinghausen's Disease.** *Bulletin et memoires de la Societe Medical des Hopitaux de Paris*, 1921, xxxvii, 357-363.

The author refers to those cases which have been previously reported and presents here a case which showed a syndrome of medullary compression of the cervical region in connection with the intrarachidian development of a tumor the diagnosis of which seemed necessarily to be neurofibroma. The patient was a man of 35 years, a farmer. There was nothing interesting in the family history. In 1908, he was with the army and felt fatigue and pains in the right leg; in 1909 he became aware of a tumor of about almond size in the right popliteal space; during that year he carried on his work but walking was painful, and when he bent the knee forcefully the tumor was painful; the pressure brought on radiation of the pain in the whole lower segment of the limb. In 1910, the tumor reached the size of a chicken egg; there was great functional inconvenience. A surgical operation was performed and a neuroma recognized. After the operation the patient resumed his occupation. In 1913, he noticed the presence of a small painful tumor, of the size of a nut, in the right axilla, and at the same time there was weakness of the thumb and index finger. The axillary tumor was operated upon in 1914, but the motivity troubles persisted. In 1917, there appeared a small tumor in the left sub-clavicular space; in 1918, a tumor appeared in the axillary space of the same side. In September, 1920, there was a progressive paresis of the muscles of the root of the left upper limb and a sensation of numbness in the fingers of this side. About the same time, a little tumor appeared on the right forearm. In December, 1920, walking became very difficult. The statement is made that the patient is affected with Recklinghausen's disease; in fact, there are multiple tumors on the nerve routes (left sub-clavicular space, left axillary space, right forearm, etc.), diffuse lentigo spots, molluscum. The nerve troubles of medullary origin may be outlined as follows: in the right upper limb, complete paralysis of the deltoid, of the biceps of the anterior brachial, of the long supinator, incomplete paralysis of the triceps; the muscles supplied with nerves by the lower roots of the brachial plexus are afflicted with paresis and hypertonia; the flexor muscles of the fingers show clonus. The sternomastoid and trapezoid muscles on both sides are normal.



The muscles of the lower limbs are not paralyzed, all the segment movements of the limb are possible, but these muscles are hypertonic, easily contracted, which leads to very difficult, spasmodic gait. When the patient is in ventral decubitus, the legs bent at right angles on the thighs, a decided fall of the left leg can be made out. An electrical examination was made to ascertain the topography of the radicular lesions. The patient presented very clearly vasomotor troubles; they are apparent on account of the lasting urticarial reactions after every puncture, and by a very accentuated dermographism on rubbing slightly the thorax, the back and the abdomen. The sudorific reactions are exaggerated on the trunk, abdomen and face. The patellar, achilles, mediopltantar, posterior tibio-femoral, posterior peroneofemoral, are exaggerated on both sides; there is bilateral ankle clonus. In the right upper limb, the stylo-radial reflex is inverted and determines the flexure of the fingers, the radio- and cubito-pronator reflexes are inverted and determine the flexure of the fingers; the tricipital reflex is rather strong and the flexor reflexes also exist. In the left upper limb the stylo-radial reflex is inverted; it causes clonic contraction of the flexors, and the same is true of the radial reflexes and cubito-pronator; the elbow reflex is very lively; the search for the flexor reflex provokes a clonus of these muscles; the percussion of the thumb phalanges, of the index, of the little finger, also, causes clonus of the flexor muscles. The cutaneous plantar excitation results in the extension of the big and little toes simultaneously with a contraction of the tensor of the fascia lata and a flexion of the foot on the leg, of the calf on the thigh, and of the thigh on the pelvis. The extension of the great toe on the right is obtainable not only by excitation of the sole of the foot, but also by the excitation of the dorsal surface, and by excitation of the cutaneous surface of the leg and of the thigh. An examination of the blood gave the following results; hemoglobin 90 per cent; red corpuscles, 4,230,000; white corpuscles 4,400; polynuclears, 63; mononuclears, 31; lymphocytes, 5; eosinophils, 1.

The Wassermann blood-test was absolutely negative. The diagnosis was made of medullary compression by an intra-rachidian tumor, on the nerve roots. The treatment can be only surgical.



STURRE, J. R.: **Two Cases of Corn-silo Poisoning.** *Journal-Lancet*, 1921, xli, 46.

The boy, 14 years old, who had formerly suffered from chorea came into the house, choking, saying he had a lump in his throat and could not swallow. Examination revealed frontal headache, a temperature of 99° F. (37.22° C.), pulse 100, respirations 25, and cyanosis. He was ordered to bed and a purgative left to be taken. Next day he still had a severe headache, was still somewhat cyanosed, and his breathing 25 per minute with a temperature of 99.2° F. At this time physical examination disclosed moist fine râles all over the chest. With purgation and salicylates, he recovered in four days.

The nature of the trouble would not have been discovered had not the father gone out to finish the boy's work, which consisted of cleaning out the old silage from the silo. While so occupied he began to feel sick and called for a physician. He was in the same condition in which the boy had been. These two cases illustrate the effect of absorption of deleterious materials, gases and vapors, such as CO<sub>2</sub> and whatever else may be the product of the fermentation of silage.

CROCKETT, F.: **The Treatment of Aged Patients with Benign Prostatic Tumor.** *Journal of Indiana State Medical Association*, May, 15, 1921, xiv, No. 5, p. 145.

When patients are first seen, the condition of the bladder and kidney should first be determined; fractional emptying of bladder is advised, taking but one-half amount at first, removing a small amount thereafter every 2 hours, thus permitting back-pressure on kidneys to be lessened slowly, which prevents danger of congestion, anuria and often death. There is a broken-down condition from loss of sleep, from frequent urination, pain and muscular effort; toxemia from accumulation of elements in excess of kidneys' power to excrete, lessened digestion, and cardiac disorders, as well as vital forces lessened on account of years. Examination shows tongue, mouth and throat are dry from lack of water in the tissues; often the patient is afraid to drink much as he thinks to lessen urinary output. Prostatics are prone to acidosis; therefore in testing the



eliminative power of the kidney it is well to inject the phthalein well into the muscle. Under treatment of acidosis may bring elimination up 50 to 60 per cent. Operative procedure is scarcely safe with a percentage of less than 35 per cent. Impairment of other organs, as heart, lungs, bowels, mental and nervous condition will improve with the increase in kidney elimination. It is best in some cases to do a preliminary suprapubic cystotomy, get the patient out of bed, and have him conscious of feeling of well-being, requiring perhaps several months before prostatic interference. This will often cause a benign prostatic tumor to decrease in size even one-half, by relieving the pressure, straining, catheterization or infection suffered.

Treatment is then surgical, and has but little dread connected with it and finds the patient in best possible condition to stand the operation. Clinical objective is not removal of a tumor, but re-establishment of normal urinary bladder function. This usually can be done. Complete urethral atresia through closure of bladder mucosa occurred in one of cases. This was later cleared up with supra-pubic cystoscopy and dilation of internal meatus. Immediate cure is usually obtained in three or four weeks after operation; the patients' condition generally and locally continues to improve for months, dribbling usually clears up, though they usually have to get up once or twice at night.

IRWIN, H. C.: **The Goiter Problem.** *Northwest Medicine*, May, 1921, xx, No. 5, p. 115.

Goiters are divided into:

(1) Adolescent, occurring between ages of fifteen to twenty-five years.

(2) Simple, occurring after twenty-five; may or may not be toxic; all degenerative changes are included. Adenomas, colloid goiters occur in women in middle life.

(3) Exophthalmic or thyrotoxic goiter, occurring at any age, but usually more common between ages of twenty to thirty-five and in females.

(4) Malignant thyroids.

People of lymphatic temperament, and those with neurotic constitution are more subject to goiters than others, poorer more than



the rich. It is demonstrated by Marine that the same is true in ill-nourished puppies, calves and lambs. Lane believes there is usually an intestinal cause; patients after operation on appendix are benefited; often in radical colon operation there was benefit noted; the same may be said of radical gastric operations. According to Engel and Ridders swelling of thyroid occurs in 50 per cent of early cases of secondary syphilis.

The simple goiter is of adolescence; this later may persist and degenerate later in life, then become toxic or malignant. As to exophthalmic or thyrotoxic goiters, the principal symptoms are exophthalmos, tachycardia, and tremor, with or without demonstrable tremor. Fright, anxiety and mental distress are factors, which influence the thyroid myocardial changes usually to take place quite early in this form of goiter, and as a rule these patients have a rapid running pulse which rate is increased on exertion. First they are extremely nervous and restless, usually with increased appetite, with sleepless and restless nights. As toxic conditions increase, the symptoms are pronounced, loss of weight and probably persistent diarrhea and exaggerated nervous symptoms.

In surgical treatment one should bear in mind, especially in thyrotoxic cases when to keep his hands off. Often a single hot water or quinineurea injection will cause such marked reaction that the patient is thrown into a crisis. Often ligation has to be done of one or both superior poles; a few months intervene before thyroidectomy may be done. There are no emergency goiters. Death is due to cardiac failure, general exhaustion, precipitated by gastrointestinal crises; rarely to pneumonia.

KNOWLES, F. C.: *The Modern Treatment of Syphilis. Therapeutic Gazette*, 1921, xlv, 320-322.

Neoarsphenamin has practically the same action as arsphenamin, but is given with a starting strength of 0.6 gram (8 grains) and continued at weekly intervals with an approximate dosage of 0.9 gram (13.89 grains). This preparation is infinitely easier to give, as diluting with a few cubic centimeters of distilled water is all that is necessary. Approximately five injections of this preparation are necessary as compared with three of arsphenamin.



HOWARD, W. F.: **The Toxic Thyroid.** *Northwest Medicine*, May, 1921, xx, No. 5, p. 110.

Toxic thyroidism may exist with or without enlargement, but is due to increased thyroid activity and causes increased metabolism:

(1) Some excitant stimulates the parenchyma of the gland to hypertrophy and hypersecretion.

(2) Colloid goiter is one result, then later a new supply of iodine furnishes the mineral necessary to produce sufficient secretion to be toxic.

(3) Long-continued strain, or sudden overwhelming experience exhausts adrenals, so that their control over iodine metabolism allows thyroid to supply toxic quantity of secretion.

(4) Any two or all three of these conditions may coexist.

Symptoms are pyknoecardia, tremor, exophthalmos, changes in size and structure of gland, secondary heart conditions, degeneration of the sympathetic nervous system, marked muscular weakness with peculiar weakness of knees, which is due to lessened adrenal activity, heart muscle weakness (perhaps dilation), weakened arterial walls may simulate aneurysm. Appetite remains good, loss of weight is rule, because increased metabolism. Restlessness; continued movement as under nervous stress, limbs move up and sidewise, body turns, clothing adjusted frequently, patient is allowed little rest. Increased peristalsis is the rule. It is the weakened eye muscles which permit the exophthalmos. Superficial capillaries flush from lessened adrenal secretion control, and petechia results. Wakefulness from the same cause. There is no pain. Dyspnea as toxicity increases is more marked.

Like chronic appendicitis these attacks of thyrotoxicosis are self-limited, but repeated attacks become more severe.

*Treatment.*—Rest in bed essential; calcium to change iodine metabolism to least harmful goiter, sodium phosphate or some form of phosphorus to lessen iodine metabolism thereby lessening secretion. In adolescents small doses of thyroid extract lessens size of goiter, and may act as prophylactic. X-ray has some remarkable successes. Increase the diet to utmost patient can assimilate.

Surgical treatment is indicated:

(1) When patient fails to respond to medical treatment.

(2) When time or means of patient does not permit expensive course of treatment.

(3) When patient prefers risk of surgery to the risk of medical treatment.

The chief error consists in removing too little of the gland. If smaller lobe be left, new attacks are apt to occur. Small fractional portions of the gland hypertrophy or regenerate so that if any be left the thyroid function remains.

No cases require such individual study and experienced judgment as the toxic thyroids.

SHIGA, K.: **Early Treatment and Protective Inoculation in Tuberculosis.** *International Journal of Public Health*, 1921, ii, 34-42.

Preventive inoculation with Shiga's tubercular serovaccine is carried out in the following cases:

(1) Those who have been exposed to infection within their family circle.

(2) Those of consumptive appearance, as, for example, the anemic and the debilitated, those of weakly constitution.

(3) Those with chronic tonsillitis or chronic cervical adenitis (scrofula).

(4) Those who easily catch colds and have a continuous, slight fever.

(5) Those who, from time to time, suffer from slight fever of uncertain origin or whose temperature rises slightly after moderate exercise.

(6) Those, finally, in whom, on auscultation, are found rough or diminished breath sounds.

Protective inoculation should be undertaken during the school age, at which age children are predisposed to or already infected with Koch's bacillus. The disease begins, as a rule, at that period when the organism is undergoing its greatest physiological change, viz., at the age of about 15 years in woman and about 20 years in man. The author calls the stage of tuberculinization of the hilus glands "the incubation period of pulmonary tuberculosis". It is during this harmless or "closed stage of infection that treatment should be begun". Up to the present the author has treated 16 cases of tuberculous cervical adenitis with tubercular vaccine and has been able to determine that these cases can easily be cured, especially when



the adenitis is acute. When treatment by inoculations has been repeated two or three times, he has never observed relapse.

During the last four years, he has treated 300 ambulant patients with tubercular serovaccine; twenty of them have received protective inoculation. The result has been most encouraging, the general condition being greatly improved, and the body weight much increased. Certain symptoms, such as slight fever and suspicious breath sounds, disappear altogether. Twenty case reports of protective inoculation and early treatment are given. The serovaccine is also used as after treatment. It has been injected after recovery from pleurisy; also after excision of tuberculous kidneys or testicles, and after other treatment such as radiotherapy and after injections of calcium chlorid. Eleven reports of such cases are given. From the experience quoted it is evident that tubercular vaccine is a very active agent for prevention and early treatment in tuberculosis. As regards the duration of the action of preventive inoculation, it can only be determined by continuing to watch the cases which have been treated. Pirquet's reaction is a necessary preliminary to inoculation, showing with great exactness, whether or not there is tuberculous infection. It shows also, by the degree of its intensity, how great is the reacting capacity of the tissues and thence the degree of immunity. Therefore, a marked cutaneous reaction is a favorable indication for vaccine-therapy. When it is weak, on the other hand, the prognosis is usually unfavorable.

Before commencing the treatment, the temperature should be noted at least during one week. It will determine the size of the first doses to be injected. In the case of fever the greatest prudence is necessary, whether it is a question of treatment or of preventive inoculation. When Pirquet's reaction is clearly positive and there is no fever, the treatment can be applied without difficulty and will not need to last long. A schematic table of prophylactic inoculation is given below.

<i>Tubercular Serovaccine</i>	<i>Quantity in c. c.</i>				
Solution II (1:5,000) . . . . .	0.1	0.2	0.3	0.5	0.7
Solution III (1:1,000) . . . . .	0.2	0.3	0.5	0.7	
Solution IV, (1:500) . . . . .	0.5	0.7	1.0		
Solution V (1:100) . . . . .	0.3	0.4	0.7		
Solution VI (Living vac. 1:20) .	0.2	4.0			

His tubercular vaccine is obtained by dilution to 1:100-25,000 with physiological salt solution containing 0.5 per cent carbolic acid. Solution VI alone is an emulsion of the living non-virulent bacilli of Koch. It contains a solution of 1:20,000 tryptoflavin, but no carbolic acid. The injection of solutions I to V is to produce a basic immunity (Grund immunität). Complete immunity is attained by the injection of Solution VI. These injections are given once a week. Treatment consists of about 17 injections and lasts about 4 months. For patients who are weak, anemic or nervous, it can be divided into two periods. In the first, for example, solutions II to IV are given; after a rest of two months, the second courses of treatment will be begun with solution III and gradually increased until the maximal dose of solution VI has been given.

NEUBNER, H.: **The Cologne Epidemic of Bathing Conjunctivitis** (Die Kölner Epidemie von Bad-Conjunctivitis). *Medizinische Klinik*, 1921, xvii, 279.

In the October, 1919 session of the Berlin Ophthalmological Society, Comberg reported more than 39 cases of conjunctivitis, all of which patients had been to a new swimming pool in Berlin. Nearly all the eye specialists in the city had opportunity to observe it. Comberg reported about 50 cases which could all be traced to two swimming pools. Since February, 1920 there have been frequent cases of catarrh of the conjunctiva, which took their rise from enclosed swimming pools. The author observed 45 cases, 44 men and 1 young girl. The woman's pool has as yet remained uninfected. The greater part of the patients were infected in one of the oldest and most popular of the swimming pools.

The findings are in all the more severe cases apparently similar. The onset is sudden, usually reaching the peak in a few hours; only a few state that the inflammation had been increasing for several days. The complaints are much less than in similar catarrhs of other etiology. It is typical of the bathing conjunctivitis that only one eye is attacked and the disease usually remains in the one eye. In all which the author observed only 14 two-sided cases, of which only 2 came up for observation in the first week of the disease, while he has seen only one case of the two-sided affection develop during



treatment. The incubation period seems to be usually between 7 and 14 days; often it is longer. In one patient, who had first infected the left eye and then after some time when that was cured, had also infected the right eye, the time between bath and onset each time was seven days. But this incubation period is not constant. The disease seems to have a predilection for youth, the oldest patient of this observation being 25 years. Comberg reports a patient of 36 years. It is to be remembered that most of those who frequent the pools are younger. An oculist, over fifty years of age, however, went into the pool daily, and boasted of his immunity.

In the new case, there is obvious narrowing of the palpebral fissure with ocular conjunctiva. Photophobia is considerable. The conjunctiva of the lower tarsus and of the lower conjunctival fold is much reddened, swollen, loosened and usually covered with follicles. These are large, red and regularly distributed. Hemorrhages do not belong to the picture of bathing conjunctivitis. There is not much secretion, but it is often very viscous and difficult to remove. The disease of the upper conjunctival fold follows the lower usually in a few days. The greater part of the patients were treated from 8 to 14 days, some for two or three months. Often, but especially in the older patients, the follicle disappeared and instead of it the conjunctiva of upperfold is laid in numerous horizontal folds; the upper fold of the conjunctiva is then many times larger than normally; everywhere in the folds one finds thick purulent secretion, which stops quickly on treatment; a severe suppuration is found only in the first days. Not infrequently a further superficial keratitis in the neighborhood of the upper edge comes as a complication, which causes somewhat more severe photophobia, but always yielding under a few days treatment; often it is on account of a focal rekindling that it is identified with lupus. It comes where the swollen firm lower border usually touches the cornea. Here there is also a similarity with trachoma, which causes probably in many observations the idea or the sure diagnosis of trachoma. In the vernacular the illness is often designated as trachoma; it is the duty of every eye specialist to call the patient's attention to the fact that the disease has nothing to do with trachoma. Many cases remain in this condition for a month and the slight discomfort that many have, is an indication of what percentage seek the doctor.

When possible the author touches it up daily for the first eight

days with one per cent nitrate of silver, taking in the severe cases, first the upper lids then the lower, then after neutralization, everts the eyelid and paints the upper recesses. Good anesthesia is advantageous for this double procedure; the author uses holocain so as not to bring on edema, as is the case with cocain. After the painting, cold compresses should be applied, but not before two hours. For home treatment he gives frequently oxycyanate poultices and in the evening a salve (5 per cent Blenno-Leineet or sublimate salve, principally to prevent the agglutination of the lids during the night). In a few days marked improvement is shown, the palpebral fissure is wider, the secretion stops almost entirely and the discomfort is gone. Two or three days of painting with argentum should follow and in the meantime an astringent collyrium, and an alum pencil may be used. It takes a severe case, when well treated, four to six weeks to arrive at a cure, but many cases show hyperemia and loosening for months, also slight ptosis without any other apparent discomfort or sequelæ. Two of the patients were reinfected. As personal prophylaxis, one-half per mille of oxycyanate solution was used without any evident results. The author's bacteriological researches were wholly negative. The prophylaxis must be handled by the pools. In Berlin the water is now disinfected with chlorin. Besides this the benches, etc., are often washed with sublimate. More than a thousand infected are circulating in Cologne. It has been recommended to close the pools for from six to eight weeks.

CASTELLANI, A.: **The Treatment of Sprue by Massive Doses of Sodium Bicarbonate.** *The British Medical Journal*, March 5, 1921, 1, 338.

The routine treatment which the author uses in sprue is generally the following: Rest in bed and at first a strict milk diet. Keep mouth scrupulously clean by using a diluted alum-carbolic mouth-wash.

Glycerinated alum

Glycerinated acid carbolic a. a.  $\mathfrak{z}$  iv (15.50 grams).

Aqua rosæ ad  $\mathfrak{z}$  iv (124.40 grams).

*Sig*: One teaspoonful to a tumbler of water.



When painful patches on the tongue are present, a cocain-carbolic mouth-wash will be found useful, as:

Cocain	Grains v (.324 gram).
Acid carbolic	3 i (3.9 grams).
Borated glycerin	3 vi (23.30 grains).
Aqua rose	ad 3 iv (124.40 grams).

*Sig:* Half to one teaspoonful to a tumbler of water.

A mild alkaline tooth paste should be used to brush the teeth several times daily. He strongly deprecates extracting the teeth except in sprue condition of the mouth complicated by truly severe pyorrhea. If there is a history of recent amebic dysentery, he gives a course of six or twelve emetin injections. In addition, patient is placed on an intensive alkaline treatment, (a) by very large doses of sodium bicarbonate by mouth and (b) intravenous injections of a 2 or 4 per cent bicarbonate solution. In a number of cases bicarbonate by mouth is sufficient; it is given in dram doses, 1 dram three times daily for the first three days, 2 drams three times daily for eight or ten days, and afterwards 3 drams or more three times daily for several weeks. Not rarely the patient feels and looks drowsy for a few days; if this condition becomes marked, decrease the dose. Papain, takadiastase, pancreatin, etc., may be added, but the effect of these drugs is not very brilliant in the acute stage and generally the author omits them altogether during the first weeks of the treatment.

When the diarrhea is very severe, 5 to 10 grains of salol may be added, but powerful astringents should always be avoided. The addition of a little salol to the powders is useful when the urine becomes too strongly alkaline. In cases of constipation, magnesium carbonate, grains 10 to 20, may be substituted for salol. The standard formula of the powders is:

Pulverized cinnamon	
Pulverized ipecac	a. a. grains (.0324 gram).
Pancreatin, papain, or takadiastase	grains iii (.195 gram).
Salol	grains v (.324 gram).
Sodium bicarbonate	3 iii (11.65 grams).

*Sig:* Powders should be given in half a tumbler of water.

The amount of ingredients are varied according to the symptoms: at times it may be useful to give bile salts (sodium taurocholate, grains 11, in cachets t. i. d.). In severe asthenia and distinct hyperpigmentation of the skin, in addition use adrenalin. Intravenous

injections of sodium bicarbonate are used in connection with the intense treatment. Ten to twenty ounces of a 2 to 4 per cent solution of bicarbonate is given slowly every day or every second day until 12 have been given; then let the patient rest, but continue treatment by mouth. After one or two weeks another course of injections may be given or even a third. In sterilization of the solution care should be taken to prevent any excessive formation of the carbonate. The author used the bicarbonate treatment here described in a large number of cases, and in 11, mostly private patients, he followed the cases very closely. He believes that large doses of bicarbonate by decreasing the acidity of the intestine contents might check the growth of *Monilia fungi*, considered to be, by some writers, the cause of the malady, and by Low and the author to be merely the cause of certain symptoms, for instance, the frothiness of the stools. If recent hypotheses concerning the etiology have been proven correct, then another explanation will have to be found. There is little doubt that a certain degree of acidosis is often present, and that an intensive alkaline treatment is indicated.

BASSLER, A., LUCKETT, W. H., AND LUTZ, R.: **Some Experiences with the Meltzer-Lyon Method of Draining the Biliary System.** *American Journal of Medical Sciences*, November, 1921, clxii, No. 5, No. 596, p. 674.

Investigations were made on patients who came for various operations requiring a laparotomy. The tube was passed one and a quarter hours before the operation. Cases were studied both clinically and operatively and the following conclusions are deduced. There is no evidence to substantiate the belief that installation of a 25 or 33 per cent solution of  $Mg\ SO_4$  into the duodenum causes relaxation of the sphincter of Oddi or that any contraction (even partial) of the gall-bladder takes place. Many substances taken into the stomach or duodenum will cause a ready flow of bile: hydrochloric acid ( $\frac{1}{8}$  the acidity of normal gastric juice) is the most potent. The gall-bladder bile is elevated by the  $MgSO_4$ . The deeper color of "B" bile is due to oxidation and not concentration from retention in the gall-bladder, this bile most often coming directly from the liver as a phenomenon of bile secretion. Mucopurulent flakes, inflammatory debris and



bacteria, come from the duodenal mucosa and not from the gall-bladder. Cholecotomized patients show the characteristic "B" bile even shortly after operation, before the ducts have had a chance to dilate. This occurs so commonly that "B" biles cannot always be from the gall-bladder. The Meltzer-Lyon method may be employed in suitable cases for temporary reasons only, as it should never be depended upon to correct or definitely benefit pathological gall-bladders. This method has no comparison in results with proper surgery.

A. T. MAYS.

SHAW, H. N.: A Short Account of the Deaths Occurring in the Gynecologic Service of the Johns Hopkins Hospital During the Year 1919. *Archives of Surgery*, 1921, ii, 535.

The account contains seven deaths from pulmonary embolism.

Woman, white, age 31, never been pregnant, but had irregular bleeding five to six times, and abdomen had increased in size during 18 months, to a full term pregnancy, temperature 100° to 103° F. Diagnosis, left ovarian cyst. At operation, uterus, tubes, ovaries and appendix were removed. On the evening of the fourth day she suddenly became cyanotic, had great difficulty in breathing, complained of severe pain in the chest and died in a few minutes.

Woman, colored, age 45, had an umbilical hernia, which had increased in size until the umbilical ring was 6 cm. (2.16 ins.) in diameter. Operation was performed and on the tenth day she developed hesitancy of speech and left side of the face was drawn; she went into coma and died eleven hours later. Necropsy revealed a pulmonary embolus.

Woman, white, age 45, had marked diastasis of the recti and enormous accumulation of fat in the abdominal wall. She weighed 194 lbs. A lipectomy was performed and the rectus muscles were brought together. On the fifteenth day, the first time she sat up, she suddenly became cyanotic, her respirations were labored and she died in fifteen minutes.

Woman with tuberculous peritonitis and a right-sided ovarian cyst. On the fourth day after operation she suddenly became cyanotic, complained of severe pains in the chest and died in a few minutes.

Woman had a large myoma. On admission hemoglobin was 25 per cent; after transfusion it rose to 40 per cent. On the eleventh day after hysterectomy she had a phlebitis and on the twelfth day she suddenly collapsed and died with signs of pulmonary embolism.

Woman, had a large umbilical hernia and rather high blood-pressure. On the tenth day after operation she developed a hesitancy of speech, left side of the face was drawn, she went into coma and died the following morning. Necropsy disclosed a pulmonary embolus.

Woman, large quantity of abdominal fat, also marked diastasis of the rectus muscles. A lipectomy was performed and the muscles were approximated. On the fifteenth day, the first day she was up, she suddenly became cyanotic, unconscious and died fifteen minutes after the onset of attack. The symptoms were those of pulmonary embolism. A necropsy was refused.

With the increasing use of transfusion when the hemoglobin is low, and with more delicate handling of the tissues, the operative mortality will be still further reduced.

**FLINT, F. R.: Post-operative Treatment of Abdominal Cases.** *The Practitioner*, April, 1921, cvi, No. 634, p. 266.

The subject is divided into treatment of wound, and treatment of patient. After-treatment of both of these is so governed by earlier stages, that it can be said that post-operative treatment begins before or at operation.

(1) The wound, if strict surgical ritual is employed in a "clean" case, will heal perfectly, leaving no trace of redness or puffiness in the incision, without any great discomfort except through muscular efforts, especially if there has been blocking off the stitch soreness with quinin and urea at time of operation. Of course if the wound is not clean, *e. g.*, an appendix abscess, pain occurs inevitably, from infection, and it is unwise to use quinin and urea in that case. Placing stitches far apart and the use of 5 per cent saline fomentations are of great assistance.

(2) The preparation of patient for operation, the anesthetic used, gentleness of handling abdominal parietes and viscera, avoidance of chilling and drying of tissues are all important factors. Dieting and purging are over-done. Food is soon out of stomach, especially a



light meal, and therefore can cause no vomiting. There is no reason why the patient should not be allowed to eat up to within a few hours of the operation.

Purging as often done only leads to griping and flatulence and increased bacterial activity for some hours afterward. An enema to clear lower bowel is all that is needed. If anything further is needed, it should occur some days before operation.

Diet after operation depends upon nature of operation. Unless an anastomosis has been performed, as soon as nausea and vomiting ceases, patient should be put on to ordinary diet as soon as he feels inclined for it. After an anastomosis, bland food is desirable for some days, to keep down acidity of gastric juice, more solid food about tenth day. Smoking should be avoided for some length of time, as it seems to lead to acidity.

*Bowels.*—It is customary to give  $\frac{1}{2}$  ounce paraffin per rectum in all abdominal cases on returning to bed, supplementing this with 3 ounces of glycerin the following morning and again on second morning. If an aperient is needed, it should not be given until sixth or seventh day and then only the mildest. Colectomy cases should have  $\frac{1}{60}$  grain (.000108 gram) eserine four-hourly, for first few days. Sitting position more or less from the first for all patients, except after operations for fixing a structure, which in the upright attitude would tend to drag away from its moorings, *e. g.*, colopexy. Most abdominal cases are out of bed from eighth to fourteenth day, with exception of fixation cases.

*Flatulence.*—This can be helped by pituitrin, as well as measures spoken of above, and use of rectal tube, as well as the employment of morphin, which acts like a charm. Avoid aperients. Pain from flatulence and effect of vomiting are to be avoided. Here again morphin or heroin may be necessary; be sure it is not from too tight bandaging, or straps putting on abraded skin. A full bladder sometimes causes pain. Keep in mind also some patients make more of pain than others. Relieve thirst by giving fluid freely before operation, and afterward, either by mouth or by rectum. Vomiting usually needs no treatment beyond giving water. If excessive, give ice to be sucked, nothing else by mouth, plenty of fluid by rectum and a little morphia may be used. Sodium bicarbonate in water may be swallowed.

*Sleeplessness.*—When pain is not the cause, it is lack of proper

management; a patient may sleep in day, and be wakeful at night; a hot drink or re-arranging his bed-clothes may settle him. Medinol, veronal or one of that class may be needed.

*Hiccough.*—It is sometimes an indication of serious import, due to stimulation of peripheral endings of various nerves, especially vagi or a reflex stimulation of the phrenics; or even an indication of serious disease of kidneys, or irritation by subdiaphragmatic infection, but common in operations on the stomach, does not last long as a rule, treated by drinking solution morphin, or sometimes gastric lavage is needed.

*Hematemesis.*—After operations on stomach, vomiting a little blood is not uncommon; large amount is alarming but not fatal; treated by sips of water in which are 30 minims of adrenalin every  $\frac{1}{2}$  hour for four doses, omitting everything else by mouth. Morphia in repeated doses is of assistance. Fresh horse serum injected subcutaneously, or if bleeding is severe, nothing better than transfusion of whole blood.

*Chest Complications.*—There is not so much danger of bronchitis as formerly, as use of seapolamin, morphin and atropin, preliminary to use of anesthetics as is now used, gas, oxygen and ether, prevents chest complications. It is in the short thick-necked, barrel-chested individual who has his air-entry obstructed and breathes noisily; this patient may need an ordinary cough mixture, or balsamic inhaler, or even continuous inhalation of oxygen, given through a rubber catheter passed into the nostril and fixed to cheek.

GUISEPPI, P. L.: *The Treatment of Urethral Stricture.* *British Medical Journal*, May 14, 1921, i, 702.

Unless a stricture can be easily dilated with sounds, or unless it is impermeable or does not allow of the passage of a No. 1 (English) catheter or sound the author believes the correct treatment to be internal urethrotomy. Should the case be one in which external urethrotomy must be performed, the method advocated is the complete suture of the urethra and skin after the performance of the operation. This method has not been suggested before, probably because of the fear of extravasation of urine. Not all cases can be dealt with in this way; strictures extending over a large extent of the



length of the urethra cannot be so treated but all others not complicated by abscesses or sinuses can. Out of a series of 31 cases of external urethrotomy, this operation was performed in twenty-five. As soon as the number 20 catheter is passed into the bladder the edges of the urethra are brought into contact by a continuous catgut suture passed through the muscles and tissues of the bulb, but not through the urethral mucous membrane. All oozing from the bulb now stops. The skin is sutured, and a small drainage tube left in for twenty-four hours. The author has seen no temperature above 99° F. (37.22° C.) and this only in a few cases. There was no extravasation of urine with the exception of two cases in which urine passed through the wound for a week and ten days respectively. The operation saves time, pain and inconvenience. In only two cases was the patient in bed for more than eight days.

**WALSON, C. M.: Silver Salvarsan in the Treatment of Syphilis.** *American Journal of Medical Sciences*, March, 1921, clxvi, 418.

The silver salvarsan used was obtained from the George Speyer Hans Laboratories, Frankfurt, Germany. Eight hundred patients have been treated with silver salvarsan and mercury, 6,000 injections having been given. Kolle states that silver salvarsan contains 22.4 per cent arsenic and 14.1 per cent silver. Bauer says that the silver in silver salvarsan is not present in the oxid or colloid form, but in a complex combination that may be considered half colloids, on the boundary between colloids and crystalloids. He advances the theory, based on experiments that these semi-colloids act as colloids in the system. He states that in silver salvarsan, neosalvarsan and old salvarsan, the relative chemotherapeutic coefficient is silver salvarsan 1 to 25, neosalvarsan 1 to 10, old salvarsan 1 to 10. He further states that the arsenic component is materially decreased in silver salvarsan owing to the combination with the antisypilitic silver component. His diffusion experiments make it seem probable that silver salvarsan is hydrolized in the body and set free as true colloids. A single dose of 0.2 gram (3.086 grains) of silver salvarsan contains 0.0254 silver and 0.043 of arsenic. Silver salvarsan is prepared in the Ehrlich laboratories at Frankfurt and the powder is placed in ampules in the following doses, 0.1 gram (1.543 grain), .15 gram,

0.2 gram, 0.3 gram. The powder is grayish black and in solution takes on an ichthyol brown color. Silver salvarsan spoils if air gets into the ampule. This damage is not easily discernible in the powder, but in solution instead of changing to an ichthyol brown, it takes on an opalescence of pronounced cloudiness or it floats around on the surface of the water in black particles. Silver salvarsan acts in the spirochetæ within the syphilitic tissue as a combination remedy in the sense that this term was used by Ehrlich. Animal experimentation finds silver salvarsan twice as effective as salvarsan (606) and three times as effective as neosalvarsan (914). Kolle states further that silver salvarsan is old salvarsan in active form plus silver and that 0.25 silver salvarsan equals 0.4 old salvarsan. Various methods of administration are described. The author has used the following technic:

The water is distilled the day previous to its use. The distilled water is boiled on the day of the administration of the silver salvarsan. The water used is at room temperature. The silver salvarsan ampules are immersed in 95 per cent of alcohol, 20 c. c. (5.42 fluidrams) of the sterilized distilled water are placed in a 60 c. c. medicine glass and the contents of the ampule are dropped into the water. The silver salvarsan floats around on the surface of the water until it is completely dissolved, which takes approximately one minute. The solution now takes on an ichthyol brown color. The contents of the medicine glass are now drawn up into a 30 c. c. Luer syringe. Just prior to the insertion of the needle the operator dries same with a piece of sterile gauze in order to prevent the solution from coming into contact with the tissues. After the needle is introduced into the vein enough blood is withdrawn to fill the syringe. This assures one that the needle is in the lumen of the vein, and according to Kolle, the toxicity of silver salvarsan is immediately reduced by the addition of albumin or serum. The injection of the solution is made slowly, requiring approximately one minute. The needle is withdrawn quickly and the operator raises the patient's arm and uses marked pressure at the site of the injection in order to prevent extravasation of the fluid back into the tissues. If silver salvarsan is used alone probably the best treatment is as follows:

Begin the treatment with 0.1 gram of silver salvarsan, increase dosage to 0.2 gram for women and 0.25 gram for men as a maximum dose, with an interval of four days between doses, and never give



more than 2 grams in any one month. The results obtained in primary syphilis on the Wassermann reaction are as good, if not better, than with any other arsenobenzol preparation used in combination with mercury. The Wassermann reaction reversed to negative as rapidly in secondary syphilis with mercury and silver salvarsan as in any other arsenobenzol preparation with mercury. Mercury should be given with silver salvarsan in the treatment of syphilis. Whether or not it should be given at the same time or following the silver salvarsan is another question. The effect of silver salvarsan on all clinical manifestations is decidedly rapid, and it appears at least as effective as any other arsenobenzol preparation. Alarming effects of silver salvarsan were never seen in any of these cases. Constant vigilance in the administration of all arsenobenzol preparations is essential. Particular attention should be given to the patient's weight, a beginning erythema, functional kidney and liver tests.

HARRIGAN, A. H.: **Linitis Plastica.** *Annals of Surgery*, May, 1921, lxxiii, No. 5, p. 551.

The author hopes to aid in explanation of those not unusual cases of pyloric tumor, which later or at autopsy show complete disappearance of tumor, left untouched at time of operation, in study of diagnosis and pathology of linitis plastica.

Case male, 51, plumber; father died of "chronic indigestion", age of 69, following a period of emaciation; brothers and sisters alive and well. Personal history of polyuria 3 or 4 times at night, smokes 20 cigarettes a day; alcohol in moderation, weight, usual 180, now 104, lost in past month; habits regular; denies venereal disease. Complained of severe pain in epigastrium, noted first 12 years ago, now very oppressive, located at umbilical region, recently appearing one-half hour after meals; nausea and vomiting constantly present.

Physical examination negative, urinalysis and Wassermann negative. X-ray showed stomach large, dilated, hypertonic, excessive peristalsis, definite persistent defect at pylorus. Six-hour showed large residue, marked obstruction at pylorus; conclusion, chronic caloused ulcer at pylorus with early malignancy.

Operation under ether, disclosing a large tumor at pylorus, extending along lesser curvature, glandular involvement in lesser

omentum; liver smooth, tumor showed considerable motility. Typical partial gastrectomy of Billroth 2 type performed, with posterior gastrojejunostomy of the no-loop antiperistaltic type; duodenal stump closed with three rows of sutures, technic of jejunostomy that recommended by Wm. Mayo. Cigarette drain to stump of pylorus, abdomen closed in layers, uninterrupted recovery.

Pathological report: white thick, intensely hard mass involving entire mass of stomach removed, began at pylorus, microscopically shows definite fibrous tissue formation, extremely dense beneath muscular layer; but penetrates and involves muscular layer to serosa; mucous membrane is normal. Tumor is not carcinoma, sarcoma, myoma or gumma; classed under linitis plastica. Operation is only treatment.

**TURNER, P.: Obstruction by a Band in a Large Scrotal Hernia.** *British Medical Journal*, May 21, 1921, 1, 738.

The patient was a man of 69 years, who had a left inguinal hernia of remarkable size; its maximum length was about twelve inches and its circumference about eighteen inches while the patient was lying down in bed. His illness which may be said to have started three days before he was seen, commenced with pain and tenderness in the hernia, followed by absolute constipation. On the third day the pain extended to the lower part of the abdomen and he had commenced to vomit. In the evening he was bringing up small quantities of foul brown liquid at frequent intervals. The pulse was not very rapid, being 100 per minute, but was of small volume; the tongue was furred but moist and the eyes were decidedly sunken. It was considered that the hernia was strangulated, with probably gangrene of some of its contents. An anesthetic was given, and the sac exposed and opened in the usual way. The contents were chiefly small intestine. The neck of the sac was very large; the intestine showed no evidence of constriction, and it became certain that this was not an ordinary case of strangulated hernia. At the lower part of the sac a coil about 12 inches in length was found to be black and gangrenous. This was caused by a well-defined rounded fibrous band attached at each end to the mesentery, crossing and constricting both the proximal and distal ends of the coil, but having no attachment



to the intestine. The band was situated at least 6 inches below the level of the external abdominal ring, and there was certainly no obstruction at the latter situation. The patient's condition was too bad to allow of a resection, so that, after the band had been divided, the gangrenous coil was drawn into the wound, incised, and Paul's tubes were tied in. The upper three-fourths of the wound were then closed. The patient, however, did not rally but died in about three hours. The nature of the band which caused the obstruction is doubtful. It was a definite, rounded, cord-like structure, attached at each end to the mesentery, but as it had no attachment to the intestine it can scarcely have been derived from a Meckel's diverticulum, though the gangrenous portion of intestine was probably ileum. One cannot help thinking that the band may have been inflammatory in origin, and that it may have followed upon the tapping which a physician had performed years before. It is quite possible that the trocar and cannula may have inflicted some injury upon the mesentery, and that, as the result of the inflammation, thus set up, the band was formed.

COLEY, W. B., AND FORTUINE, S. T.: **Acute Intestinal Obstruction due to Strangulation of a Loop of Small Intestine by Meckel's Diverticulum.** *Annals of Surgery*, 1921, lxxiii, 568.

Intestinal obstruction due to Meckel's diverticulum may be produced in several different ways:

(1) Valvulus may take place by rotation of the ileum about its mesenteric border caused by the lever action of the distended diverticulum.

(2) Intussusception has occurred due to the invagination of an inverted diverticulum into the ileum forming the starting-point for a progressing intussusception.

(3) The commonest form of obstruction is caused by the diverticulum assuming the rôle of a band and causing strangulation of bowel loops caught between it and its attachment to the intestine and to the abdominal wall, generally at or near the umbilicus, or more rarely to the posterior parietal peritoneum near the root of the mesentery.

He cites a case which was operated upon and the patient made an uninterrupted recovery.

In the summing up he quotes Reginald Fitz's paper, containing record of 295 cases; strangulation occurred in 101 cases; intussusception, in 93 cases; abnormal contents, in 44 cases; twists and knots, in 42 cases; strictures and tumors, in 15 cases. Of the cases of strangulation (101), 63 were due to adhesions; 21 to vitellin remains; 6 to adherent appendix; 6 to mesenteric and omental slits; 3 to peritoneal pouches and openings; 1 to adherent tube; 1 to pedunculated tumor; 10 per cent were in males; pain was first symptom, usually located at umbilicus; distention in one-half the cases, and in the same number was fever found. Medical treatment resulted in death in second to fourth day in one-half the cases.

BEZANCON, F., ET DE JONG, S. I.: **Clinical Forms, Pathogenesis and Treatment of Tubercular Hemoptysis** (Formes cliniques, pathogenie et traitement des hemoptysies tuberculeuses). *Reveu de la Tuberculose*, 1921, ii, B ser., p. 1.

There are several types of pulmonary hemoptysis:

(1) So-called first hemorrhage: (a) hemoptysis without evolutionary onset, and sole manifestation of a tuberculosis, which has been so far latent, and which will again become clinically latent; (b) an alarming hemoptysis which will accompany the onset of pulmonary tuberculosis, sometimes of a pneumonic or splenopneumonic nature.

(2) Hemoptysis occurring rarely during the course of a confirmed ulcerating tuberculosis: (a) accompanying the onset; (b) without any other symptoms developing.

(3) Repeated hemoptysis: (a) hemorrhage with long intervals, without appreciable intercurrent pulmonary lesions, florid tuberculosis, or emphysematous tuberculosis; (b) eretic form of fibrocaseous tuberculosis.

(4) Hemorrhage of galloping tuberculosis.

(5) Ultimate hemorrhage from the cavities.

Hemoptysis is often the first apparent symptom of an existing tuberculosis. Among 408 cases from literature by Turban 47 were ushered in by hemoptysis. We know today that these hemorrhages are by no means a symptom of onset of tuberculosis, but a symptom of tuberculosis, which has been so far latent.



Sometimes hemorrhage sets in suddenly without fever or change of normal appetite, and which on auscultation is not discernible.

Usually no bacilli are found in the sputum; sometimes an abundant number of them are found. No prodromal symptoms occur, and the onset is very sudden. One is inclined to look for the site of hemorrhage in the pharynx; Castellani's spirochetes must be looked for among patients of the Indo-Chinese stock. Epiglottitis or corticopleural lesion will be sought. Some patients will have a recurrence of hemorrhage 10 or 15 years later. Then usually they are accompanied by fever and bacilli in the sputum. These hemorrhages are often of a benign character. Many people have had one hemorrhage and never developed phthisis, nor are they clinically tuberculous. Alarming hemorrhage may occur in individuals as they are doing their work; the physician is called, and he finds that they have had various symptoms at different times of their life. In some cases fever is found. It may occur in splenopneumonic cases, such as Grancher has observed. If the patients have time to take care of themselves they may be definitely healed. The common type of concomitant pulmonary hemorrhage may be purely mechanical without any accompanying modification of the fever curve, and not changing the course of the tubercular patient who seems on the road of improvement.

In the latter case it may usher in a stage of aggravation and influence the prognosis unfavorably.

Repeated hemorrhage as a prevalent symptom may or may not accompany new exacerbations of the pulmonary tuberculosis or the common fibrocaseous type. Sometimes patients may have several recurrences at several years' interval with night sweats, emaciation, diarrhea, cough, fever, etc. Hemoptysis will set in without prodromal symptoms. It may cause little distress. Sometimes the severity will alarm the patient. On auscultation, some râles will be found evidencing the existence of liquid in the bronchi, rarely some modification of the vesicular murmur; usually no bacilli in the sputum.

There are patients who have had hemoptysis at long intervals, but who have in the meantime showed some signs of tuberculosis in evolution. These patients are often well-built, florid, even stout. Some of the author's patients have been very obese. The physical signs are nevertheless more marked in these patients than in the

preceding class. There is dulness, rough breathing and some râles sub-crepitant to the cough. Often there are signs of emphysema, with lesions limited to one peak, but able to give the impression of a little cave. In their sputum there are few or no bacilli; hemoptysis occurs throughout the course. They are often quite abundant, periodic, accompanied sometimes by a little feverish exacerbation. The hemoptysis past, the patient can return to work, sometimes fatiguing work. These cases have a favorable prognosis, because they are seen in the course of fibrous tuberculosis, however, sometimes these cases terminate rapidly and abruptly. In the erethic forms of fibro-caseous tuberculosis, the physical signs, varying in different cases are those of infiltration or of more or less extensive softening, with augmentation of the adventitious sounds, moistening of these sounds at the moment of the hemoptysis. These latter are frequent. The patients have "blood in the mouth" very easily, and that under the influence of occasional causes, sometimes quite well defined. The progress and evolution of these forms are quite variable; their evolution seems to be slow. These patients usually belong to the erethic type, with nervous, excitable temperament, who become congested at the slightest emotion, are agitated and ruddy. This congestive type is often met among alcoholics—and also among women. In studying the conditions under which these hemoptyses develop it seems that the hemoptysis is contemporaneous with a new exacerbation, an acute process. The patient has fever for a longer or shorter period, the expectorations which follow the hemoptysis contain tubercle bacilli. The mechanism of these hemoptyses is difficult to define further; in certain cases, the exacerbation has been provoked by an additional pneumococcal infection. Quite often, the hemoptyses are more frequent at times of great humidity. To explain the initial hemoptysis, one must turn to the secretion of new toxins, which accompany the formation of new lesions; it is at these periods that the patient reacts best to tuberculin, the congestive and hemoptoic properties of which are well known. When the hemorrhages are seen in the course of an evolving exacerbation, they evidence perhaps even the allergic character of these attacks. These hemoptyses are in general, accompanied by fever, change in weight and hemoral changes, and appear in reality at the peak of the attack. Experimental research has proved that this experimental pulmonary tuberculous reinfection is accompanied by intense congestion



of the alveolar capillaries and even a real hemorrhage. Analogous considerations would perhaps explain certain hemoptyses coming on at the menstrual period, during which women often have fever, and phenomena of revival at the site of slumbering lesions, the periods seeming to act as tuberculin or potassium iodid. Menstrual hemoptysis might be explained also by the fact of hypertension. It is curious to compare these facts with the hemorrhages of menopause. In ordinary phthisis, hypotension is the rule but in the so-called arthritic forms in florid persons, there seems to be hypertension. The atmosphere of the seashore, and altitude, have both been blamed for hemoptysis, as well as variations in the thermometer and barometer readings. Of these conditions, humidity seems most to blame. Tincture of iodine, creosote, potassium iodid and even arsenic, sodium cacodylate, cinnamic acid may play a part in the genesis of repeated hemoptysis. Superalimentation has also been thought guilty. Hemoptysis coming on after coitus may be attributed to the hypertension generally or secondarily localized in the lung; these hemoptyses are apuretic and not abundant. In treating the patient it is advantageous to place the patient not stretched out flat, but semi-reclining, the back and arms supported by pillows; in this position it is easier to expectorate, cough and to drink and the indispensable quiet is less uncomfortable. Moreover, absolute silence is required and all attempt at auscultation should be avoided. The first drug, on the use of which discussion is not yet closed, is the injection of morphin. The authors believe that where the patient coughs constantly, he is a prey to extreme anguish and agitation, and there is advantage in giving a morphin injection. In habitual cases, it would be better to avoid its use. There is much discussion concerning the use of hypertensive drugs, of which ergotin is the type. These hypertensive drugs act especially as vasoconstrictors, because they lead to a contraction of the smooth fibers of the arteries. Quinin, Hamamelis and hydratis have been abandoned; only digitalis still has its followers. To the vasopressor drugs extract of the posterior lobe of the hypophysis may be added. This elevates general blood-pressure but causes a fall in pressure in the pulmonary circulation. Some use vaso-dilating substances as amyl-nitrite or mistletoe extract. Recently ipecac, in this group, has been relinquished for its alkaloid, emetin chlorhydrate. The authors employ in the average case, Dover's powder, in which ipecac is associated with a small quantity of opium;

it calms the cough at the same time favoring expectoration. Some American authors use almost exclusively an injection of atropin in large doses (1-3 milligrams). Among the blood coagulants used, there are calcium chlorid and horse serums. Gelatinized serum seems indicated in grave cases—all horse serum should be employed very prudently. In serious cases it should be employed very prudently. Likewise, in serious cases, purely mechanical treatment is advocated. One is the ligature of the limbs with flannel or elastic bands. Artificial pneumothorax has been used. Demmarest proposes a temporary hemostatic pneumothorax for all cases where one is sure of the side bleeding, and where, by its repetition, hemoptysis is dangerous. The author has also advised inhalations of oxygen to combat the bronchial infection.

**EDITORIAL: Diffusion Through the Vagus Nerve of Poisons Taken by the Mouth.** *Medical Record*, 1921, c, No. 12, p. 511.

The vagus nerve is often involved more or less in organic affections of the stomach. In ulcer and especially *ulcus callosus* of the lesser curvature, as well as in certain cases of cancer, there may be a vagus neuritis. From the peripheral filaments the disease ascends along the nerve fibers until the trunk is reached. In studying this phenomenon, Loeper, Forestier and Tonnet made a number of experiments with toxic substances—potassium ferrocyanid, formol and tetanus toxin, substances which may be demonstrated by histochemical or biological tests (*Progrès médical*, April, 20, 1921, xlix, 18). In young fasting dogs the pylorus was ligated and 60 c. c. of the 20 per cent solution of ferrocyanid introduced into the stomach. Absorption was shown by the elimination of the drug in the urine but the histochemical test of the tissues with hydrochloric acid and perchlorid of iron proved negative. When formol was used to the extent of 30 c. c. of 15 per cent aqueous solution the result was also negative, but the substitution of a glycerin solution, after scratching the mucosa with a needle, gave a positive result, as shown by the rosanilin bisulphate test. In the absence of exact information on the matter we have to conclude that these histochemical tests were made in connection with fibers of the vagus. The tetanus toxin was introduced into the stomach like the other substances—20 c. c. of a 1



to 2 per cent solution after ligation of the pylorus. Here is a histochemical demonstration was out of the question. It was long ago shown by Vincent that the stomach mucosa and juices are able to neutralize the local action of the toxin and prevent its absorption. The authors therefore took the precaution to scratch the stomach mucosa as above mentioned. The left vagus was then excised, triturated into a pulp and injected into the right forefoot of a guinea pig. The second day showed a paresis of this member, followed on the ensuing day by full paralysis and contracture of the same. The sciatic of the same dog used as control gave a negative result. So far as the research has gone it seems assured that at least two classes of substances, aldehyds and toxins, are able to traverse minimal lesions of the gastric mucosa and become incorporated incidentally in the distribution of the vagus nerve. It is, therefore, possible that in the pathological stomach certain toxic substances may also be able to interfere with the innervation of the vagus nerve in a like manner.

## SECTION ON LABORATORY AND RESEARCH

BLAU, A. I.: **Factor Concerned in the Incidence of the Contagious Diseases.** *New York Medical Journal*, 1921, cxiii, 750.

Directly or indirectly every case of contagious disease originates in another of the same kind. Primarily the patient is the chief source of infection. While direct contact or proximity with the patient is responsible for the greater proportion of the contagious incidence, indirect transmission through infected clothing or other articles, or through the agency of a third person, or through domestic animals is quite possible, and often the means of transmission. Most of the factors responsible for the occurrences of these diseases are subject to control and are therefore avoidable or to say the least, subject to amelioration. There are three fundamental causes responsible for the incidence of contagion. In most instances the first two, and above all the second, are the dominating influences. The three factors are (1) errors in diagnosis, (2) faulty quarantine and (3) defective disinfection. If a child, with scarlet fever, whose illness is diagnosed as being due to a gastro-intestinal disturbance is allowed to go to school after the subsidence of the acute signs and symptoms, we may reasonably expect secondary cases of that disease among the pupils. Recently a doctor saw a child with a scarlatiniform rash, which he diagnosed as due to ptomaine poisoning. A few days later three other children in that family became ill with scarlet fever, and subsequently desquamated in the regular way. The error in diagnosis is of course not responsible per se for the transmission of the disease. It is the lack of quarantine to which the error leads that is the active agent in the transmission. By far the more important factor in the transmission and spread of the contagious disease is the failure to observe proper and effective quarantine of the



sick. This is particularly true in the milder forms of the disease and during convalescence. Scarlet fever while most contagious during the rash febrile stage can be transmitted with almost equal facility during subsequent stages. In fact it can be transmitted after the desquamation has been completed and the patient discharged, the source of infection being the discharges from the nose, throat, ears or glands. Similarly diphtheria can be transmitted long after the acute stage has passed, and the patient apparently recovered, as long as Klebs-Loeffler bacilli are present in the nose or throat, and it is well known that the diphtheria bacilli can retain their virulence indefinitely. Late infection could be avoided if the patient were kept under strict quarantine until fully recovered, and the discharges from the mucous membranes had completely disappeared. Not infrequently cases of contagion are encountered in premises the seat of that contagion weeks or months before. It is a late infection caused by the germ or poison of contagion still present in those premises, left over by the patient after recovery, which has not been removed or destroyed by the disinfection or renovation. This is not a mere assumption, for we know that the poison of the contagious diseases is very tenacious, particularly that of scarlet fever, and clings for weeks or months to furniture, carpets, and other household articles. The periodical exacerbation of the incidence of contagion in the cold season and in the spring can be explained, in a great measure, by the application especially of the second of the basic factors. In the winter there is a violation of the quarantine within and in the spring the violation is without.

RHAMY, B. W.: The Value of Ice Box Incubation and Cholesterin Antigen as Shown by 1,600 Comparative Tests. *American Journal of Syphilis*, 1921, v. 300.

In this series, comparisons were made by making two complete tests on each serum, one by the regular heat incubation method, and one by ice box incubation, and using two antigens in both. The antihuman system was used throughout. It is apparent that ice box incubation is uniformly more sensitive, the average in this series being 12.6 per cent more positive reactions, while in general 20 per cent or one-fifth of all reactions were stronger in the ice box. The

highest degree of sensibility, 20 per cent, is obtained in known cases of syphilis under treatment, and next with 13.1 per cent are those giving a history of possible heredity, luetic marriage, etc. The lowest figure, 2 per cent, is obtained in cases where there is no history or symptoms to give rise to a suspicion of the presence of syphilitic antibodies. The theory of ice box incubation is based on the idea that where there is only a trace of syphilitic antibodies, a short incubation period may not produce appreciable fixation of complement, whereas, a longer period of incubation will allow fixation, the reaction evidently following the law of mass action, the antibody apparently entering into combination with complement and antigen but being released immediately to bind other units of complement. In the cases diagnosed clinically as syphilis, the ice box showed a general average of 82.6 per cent positives, an increase of 9.8 per cent over the heat incubation. Heretofore ice box figures reported applied principally to alcoholic antigen. In this series cholesterin antigen showed about the same increase in sensibility in the ice box. The Wassermann test, if done in the ice box, is in general about 12.6 per cent more sensitive than the heat method, and therefore, just that many per cent more accurate. The ice box also shows that most of the doubtful reactions by heat, indicate traces of syphilis. A better judgment can be formed of the meaning of the result where both heat and ice box figures are given than where only either one or the other is reported. The use of sodium acetate as a complement preservative allows longer periods of primary incubation, as its stabilizing qualities prevent rapid deterioration of complement when subjected to heat.

BARACH, A. L., AND WOODWELL, M. N.: **Studies in Oxygen Therapy with Determinations of the Blood Gases. I. In Cardiac Insufficiency and Related Conditions.** *Archives of Internal Medicine*, October 15, 1921, xxviii, No. 4, p. 367.

The following studies in oxygen therapy aimed to determine the most efficacious method of administering oxygen, and by a comparison of the clinical results obtained with a study of the effect of oxygen administration on both the arterial and venous blood, to determine what conditions of oxygen want could be relieved by this agent.



Meltzer is quoted to the effect that in the funnel method of administration the atmospheric air is not richer by more than 2 per cent, if as much. The use of the mask in giving oxygen has been found very effective by certain workers, but it has the objection that patients already suffering from air hunger are distressed by the application of the apparatus, many of them, in fact, refusing to submit to it. A nasal catheter has been used with satisfaction by some, but others, while admitting that it was well tolerated, found the method ineffective. The method advocated by the authors consists in the use of a rubber mouth-piece, such as is used in the Benedict respiration apparatus. The mouth-piece is attached through a one-inch tube to a canister filled with soda lime, to absorb the  $\text{CO}_2$ , and this in turn to a rebreathing bag, into which the oxygen is allowed to flow as needed. The mouth-piece is held easily and comfortably. "The patient is asked to breath through his mouth, and usually adapts himself easily to the mouth-piece, breathing from four to seven parts oxygen through his mouth, and three to six parts air through his nose". A mixture of about 50 per cent oxygen is usually inhaled.

In discussing the subject of anoxemia (oxygen want) the authors recall Barcroft's classification. He divides the types into: (1) The anoxic type, in which the oxygen saturation of the arterial blood is below normal; (2) the stagnant type, in which the venous blood is deficient in oxygen, because of slow circulation, and consequent depletion of the oxygen in the capillary field; and (3) the anemic type, in which there is an insufficient supply of hemoglobin to carry the needed oxygen.

It will be seen that the anoxic type is primarily due to pulmonary causes, *i. e.*, imperfect oxygenation of the blood as it flows through the lungs, as in edema of the lungs. The stagnant type is usually due to cardiac causes, *i. e.*, decreased rate of blood through the systemic capillaries. In cardiac insufficiency, the two frequently occur together, the stagnant type because of poor heart action, and the anoxic type because of pulmonary congestion and edema.

Turning to the experimental work, the authors first found that in two normal controls there was a slight elevation in the oxygen saturation of the arterial blood in both, and in the venous blood in the one in whom this was examined, but that there was no effect on the pulse, respiration, blood-pressure, vital capacity, electrocardiogram, or venous  $\text{CO}_2$  content. In 7 cases of cardiac insufficiency they

found an anoxic (arterial) anoxemia in all, and a stagnant (venous) anoxemia in six. Oxygen therapy improved the cyanosis, and the patients usually said they felt more comfortable, or that their breathing was better, but they were "rarely enthusiastic". The arterial oxygen saturation was always increased, the increased oxygen tension in the alveoli tending to compensate for the reduced permeability of the congested pulmonary tissue. The venous saturation was increased in all except one case of auricular fibrillation, the increase being largely due to the better arterial saturation. In some cases there was a more permanent increase in the venous saturation that seems best explained on the basis of an improved blood flow resulting from the increased supply of oxygen. The arterial and venous anoxemia of acute and chronic bronchitis, occurring in cardiac insufficiency, was completely relieved by oxygen inhalation. The relief of cyanosis and the slowing of the pulse were the outstanding objective changes. The blood-pressure, vital capacity, arterial and venous CO<sub>2</sub> content, urinary excretion, and respiratory rate showed no definite changes. The electrocardiogram showed consistent changes in two cases of right bundle branch block, and no change in one uncomplicated case of auricular fibrillation.

T. HOWARD.

BARACH, A. L., AND WOODWELL, M. N.: **Studies in Oxygen Therapy.**

**II. In Pneumonia and Its Complications.** *Archives of Internal Medicine*, October 15, 1921, xxviii, No. 4, p. 394.

The second paper on oxygen therapy deals with pneumonia. A detailed history of the course of the disease in 11 patients is given, with careful notes on the clinical results observed from the use of oxygen, together with a report on the changes in arterial and venous oxygen saturation. The author's summary most satisfactorily condenses the results of their experience.

"There have been observed, in all, 11 patients with lobar pneumonia, each of whom had an arterial anoxemia at some stage of the disease, and 4 patients with bronchopneumonia, 2 of whom had an arterial anoxemia. Ten patients with lobar pneumonia were treated by the inhalation of oxygen. In 8, the blood gas determinations were done before and after oxygen therapy. Of these, the arterial



oxygen saturation was increased in all except one. In 4 it was raised to the normal level. Two patients with bronchopneumonia who had no arterial anoxemia were treated with oxygen. In one the arterial saturation was shown to be increased directly after the inhalation. In the second, analysis twenty-four hours later showed a slight fall in arterial saturation. A true stagnant anoxemia was demonstrated in one of ten cases of lobar pneumonia. In four other cases there was a relative lowering of the venous saturation due to the diminution of the arterial oxygen. The difference between the arterial and venous saturation was generally normal or less than normal, indicating that a normal or increased blood flow is usually present in uncomplicated pneumonia.

"The most consistent changes in the clinical condition of the patient were the clearing of the cyanosis and slowing of the pulse. The respiratory rate was sometimes lowered; the mental condition of the patient was frequently improved; the dyspnea was not usually relieved. Oxygen inhalation for one-half hour was sufficient in the mild or moderate cases of anoxemia to elevate the arterial saturation and cause clinical improvement. In the severe cases, one to two hours were necessary. The effect of a single administration was, in the main, temporary. The effect of repeated and prolonged administration produced persistent beneficial changes in the oxygen saturation of the blood, the pulse, color, breathing, comfort, and mental condition of the patient. In three patients, in whom a condition of acute oxygen want followed the development of pulmonary edema, the prolonged administration of oxygen resulted in striking clinical improvement, and seemed to avert a fatal outcome. It is believed that oxygen therapy has a rational rôle in the treatment of pneumonia."

T. HOWARD.

WARD, C. B., AND TANNER, F. W.: **Bacteria on Subsidiary Coins and Currency.** *American Journal of Medical Sciences*, October, 1921, clxii, No. 4, No. 595, p. 585.

Coins do not spread disease. Thirty-seven of the strains of micro-organisms isolated from coins were spore-formers and were destroyed by the action of the metals. *Bacillus anthracis* was able to

live eighty days on pennies and seventy-one on nickels. Coins in general circulation come in contact with acids and alkalis and form soluble salts on their surfaces which keep down the bacterial flora and destroy non-spore-forming organisms. Paper bills were examined and old bills were laden with organisms while new bills contained comparatively few.

A. T. MAYS.

LEVIN, O. L., AND KAHN, M.: **Studies on the Chemistry of the Body in Diseases of the Skin.** *American Journal of Medical Sciences*, November, 1921, clxii, No. 5, No. 596, p. 698.

In mild cases of eczema no disturbances were observed in the chemical composition of the blood nor in the condition of the hydrogen-ion concentration of the body fluids. In eczema accompanied by other metabolic derangement the deviation of the blood chemistry was due to the metabolic diseases, as in diabetes where acidosis was noted. Severe diffuse eczema showed an acidosis and an increase in ethereal sulphate fraction in the urine, perhaps indicative of intestinal putrefaction; otherwise a normal blood chemistry. Acne vulgaris showed no deviation aside from hyperglycemia. In psoriasis the non-protein sulphur of the blood was slightly increased. One case of xanthoma showed a marked increase of blood cholesterol. A mild acidosis accompanied some cases of seborrheic eczema, psoriasis, acne vulgaris, and urticaria.

A. T. MAYS.

GOODPASTURE, E. W.: **The Influence of Thyroid Products on the Production of Myocardial Necrosis.** *The Journal of Experimental Medicine*, October, 1921, xxxiv, No. 4, p. 407.

In a recent study of hearts from cases of hyperthyroidism in which death resulted from myocardial exhaustion, the writer found acute necrosis of cardiac muscle in one case so diffuse as to involve a large part of the ventricular wall. The character of the necrosis was that usually associated with extreme intoxication by acute infections such as diphtheria or scarlet fever, and more commonly oc-



curring in youth. There was no evidence of any such severe intoxication and it seemed probable that the myocardium was in a state which rendered it more easily injured than usual.

Hyperthyroid cases almost always at one time or another, show cardiac symptoms which not infrequently progress in severity until the patient becomes permanently incapacitated by myocardial exhaustion. It is generally considered here that the products of the diseased thyroid are the immediate cause of the injury to the heart, though the manner of action here is not understood.

Fahr demonstrated in 1916 destructive lesions of the myocardium in cases of exophthalmic goiter and attributed the injury to direct action of the products of the diseased thyroid gland upon the heart muscle fibers.

In the cases observed the author found no indication of severe infection to explain the necrosis. It seemed to the author that hearts overstimulated by disease of the thyroid and laboring in a condition bordering upon exhaustion, were in a state of greater susceptibility to injury by toxic substances such as may have resulted from a relatively mild infection which under ordinary conditions would not seriously affect the myocardium.

A number of experiments were made to study, first, the demonstrable effects, after feeding desiccated thyroid gland, or after intravenous administration of crystallin thyroxin upon the myocardium. Observation were then made to determine whether these substances would cause the heart to be readily injured by toxic agents, notably chloroform.

Rabbits were used in this series of experiments. It was found that rabbits receiving 1 gram (15.43 grains) thyroid gland or 1 milligram thyroxin intravenously every second day exhibited a marked increase in pulse rate, more forcible heart action, loss in body weight, increased irritability, frequent diarrhea and falling out of the hair. Animals subjected to this treatment alone and killed at periods of from two to three weeks may show slight though definite lesions in the myocardium, notably perivascular necrosis or fibrosis in the wall of the right ventricle, focal necrosis in the papillary muscles of the left ventricle and more rarely a few scattered small foci of necrosis within the myocardium elsewhere. The lesions evidently occurred early in the experiment and were for the most part healed. There was no evidence of progression under continued thyroid treatment.

Those rabbits given thyroid or thyroxin until a pulse rate of 300 per minute was reached showed, after one or two light chloroform anesthetics, a wide-spread necrosis of the myocardium sufficient in one case to cause severe disturbances in myocardial function.

The experiments indicate that thyroid intoxication renders the myocardium more susceptible to other influences and that chloroform as an anesthetic in cases of hyperthyroidism is apt to be exceptionally harmful.

H. M. FEINBLATT.

BARACH, A. L., AND WOODWELL, M. N.: **Studies in Oxygen Therapy.**

**III. In an Extreme Type of Shallow Breathing Occurring in Lethargic Encephalitis.** *Archives of Internal Medicine*, October 15, 1921, xxviii, No. 4, p. 421.

Two cases of epidemic encephalitis are described, in each of which there occurred a condition of extreme cyanosis associated with a peculiar type of breathing which upon the application of the oxygen apparatus proved to be even more shallow than it appeared, the re-breathing bag scarcely moving with the respirations. Blood analysis showed a marked deficiency of oxygen and an excess of CO<sub>2</sub>. Oxygen inhalation greatly relieved the anoxemia but was without effect upon the steady accumulation of carbon dioxid. In the beginning the circulation was strikingly improved but the carbon dioxid retention ultimately so weakened the heart that oxygenation was again interfered with and a fatal issue resulted. The authors attribute the respiratory failure to involvement of the center in the medulla. The importance of carbon dioxid retention as a factor in shallow breathing is emphasized.

T. HOWARD.

HARRISON, M. W.: **Intravenous Chemotherapy.** *Illinois Medical Journal*, June, 1921, xxxix, No. 6, p. 498.

While experimenting with various dyes on guinea-pigs in the hope of finding a specific in the treatment of tuberculosis, Harrison noted that an hexamethyl dye, a member of the triphmethylmethane



group, exerted a germicidal action upon the tubercle bacillus, did not injure the body cells and had the property of passing through the tissues and penetrating avascular regions. The dye readily combined with and killed the organisms. A solution of the dye ten times stronger and double the quantity that he ordinarily used, was necessary to kill a guinea-pig. He has used this dye clinically for the past four years and states that his patients and those of others are still in good condition and are following their usual vocation without showing any indication of their ever having had tuberculosis. This dye is given intravenously, to any kind of case, regardless of the stage of advancement, without danger of general reaction. The dose 125 c. c. is given at weekly intervals. A case of miliary tuberculosis with fetid bronchitis is reported. This man was regarded as a hopeless case. He was given weekly injections of 125 c. c. After the first two injections he showed improvement, the strong odor to his breath entirely disappearing. In the first six weeks he gained twenty four pounds. About four months after receiving the first treatment the patient left and returned to work and up to date has not had any return of his old symptoms. During the four months he gained forty-six pounds.

The writer does not see how anything else beside treatment can be credited for his patient's recovery as he said he had just as good a bed at home, just as good attention, and just as good air and everything else as he had had while under treatment.

G. H. LORDI.

**WOLF, E. P.: Experimental Studies on Inflammation. I. The Influence of Chemicals upon the Chemotaxis of Leukocytes in Vitro.** *Journal of Experimental Medicine*, October, 1921, xxxiv, No. 4, p. 375.

Molds of 2 per cent salt-free agar were made and wells formed in these by removing a disc with a sharp cork borer. These molds were placed upon slides and the wells treated with the reagent to be studied. Blood taken directly from a vein was then added by means of a small pipette to the wells containing the reagent and the slides were then incubated for 45 minutes at 37° C. (98.6° F.). The blood was then washed out of the wells and the floor and walls examined for leukocytes, which had migrated from the clot.

On frozen serial section it was observed, that the leukocytes penetrated into the agar, and that the depth of penetration was proportional to the positive chemotaxis produced by the substance combined with the agar, as demonstrated by the number of leukocytes adherent to the walls of the test chambers.

Molecular concentrations of from 0.0001 to 10 per cent of the different salts were employed. Human, rabbit, guinea pig and dog bloods were used.

Salts of calcium, sodium, barium, strontium, magnesium, mercury, organic acids, amino acids, alkaloids as well as a large group of miscellaneous substances were all carefully examined for their chemotactic activity.

The calcium ion was found markedly chemotactic in all concentrations and combinations, except the citrate, where the citrate ion which is negative neutralized the positive chemotactic activity of the calcium ion. Sodium and magnesium ions are neutral. All the phosphates of sodium are markedly positively chemotactic. The blood of a patient given phosphates shows a great increase in chemotaxis with sodium phosphate, calcium chlorid and even with sodium chlorid which is ordinarily neutral. Potassium salts are all negatively chemotactic.

Morphin, cantharidin, histamin and turpentine were all found to be positively chemotactic.

H. M. FEINBLATT.

OLITSKY, P.: Typhus Fever Among Recent Immigrants. Experimental Demonstration of the Identity of This Disease with European Epidemic Typhus Fever. *Journal of Experimental Medicine*, October, 1921, xxxiv, No. 4, p. 365.

Material was taken from a young woman by venous puncture and immediately injected intraperitoneally into each of two guinea pigs. The patient from whom the blood was drawn was a native of Czecho-Slovakia who had embarked for New York at Trieste. At this time she had been ill for 8 days with headache and continued fever. Her face showed the rash and her conjunctivæ the injection characteristic of typhus fever. The anterior surfaces of her arms and forearms were covered with a fading petechial rash. Her serum gave a positive Weil-Felix reaction at a 1-300 serum dilution.



The guinea pigs inoculated developed the characteristic febrile reaction and the microscopic study of the organs made after killing the pigs showed constant pathological changes similar to those found by investigators of typhus fever in man in Europe and Mexico.

The experimental disease induced corresponded to that set up in the same species with the human and louse strains of the Polish virus.

Macroscopic examination showed only enlargement of the spleen and a skin rash. Histologic examination of the different organs demonstrated a particular vascular change especially about the blood-vessels of the brain. There was an absence of secondary infection by the ordinary organisms. These animals developed specific immunity reactions. A pig after inoculation with the virus remains immune to a subsequent injection of the typhus fever virus.

The experiments demonstrated in guinea pig inoculations that the virus obtained from the patient in New York was identical to that obtained from patients and from the louse in Poland.

H. M. FEINBLATT.

ROGERS, J. B.: **The Effect of Nitrous Oxid, Natural Gas and Formaldehyd on Experimental Tuberculosis.** *American Review of Tuberculosis*, October, 1921, v, No. 8, p. 637.

Neither repeated nitrous oxid and oxygen anesthesia, nor formaldehyd nor natural gas influence the development or progress of the tubercle in guinea pigs infected through the respiratory route with a watery solution of tubercle bacilli positive sputum.

C. A. SCHMID.

KARSNER, H. T., KOECKERT, H. L., AND WAHL, S. A.: **The Diastatic Activity of the Blood in Experimental Hyperglycemia.** *Journal of Experimental Medicine*, October, 1921, xxiv, No. 4, p. 349.

A series of experiments was made upon eight rabbits and three dogs and the following studied:

(1) The effect upon blood diastase after subcutaneous injection of phlorizin, uranyl nitrate, morphin sulphate, and adrenalin.

(2) The effect of puncture of the floor of the 4th ventricle.

(3) The effects of complete pancreatectomy upon the blood diastase.

As control studies, the effects of diet, repeated bleeding, asphyxia, anesthesia and surgical shock were observed.

The injection of phlorizin, uranyl nitrate or adrenalin caused a glycosuria without affecting the blood diastase content. Puncture of the floor of the fourth ventricle acted in like manner; only effects noted were a marked transitory hyperglycemia and glycosuria with no increase in the content of blood diastase. Injection of morphin resulted in an increase in the diastase content at the same time that a hyperglycemia developed. Experimentally induced asphyxia gave the same blood-picture.

Following complete removal of the pancreas in dogs the hyperglycemia and glycosuria developed and became progressively worse until death. A definite increase in the diastatic activity of the blood occurred but was in no way proportional to the hyperglycemia.

The effect of ether anesthesia was to produce but a slight increase in diastatic activity.

Diet did not affect the diastase content of the blood nor did repeated bleeding unless carried on to the extent of developing a severe anemia, and even then the content was but slightly increased.

H. M. FEINBLATT.

CARREL, A., AND EBELING, A. H.: **The Multiplication of Fibroblasts in Vitro.** *The Journal of Experimental Medicine*, October 1, 1921, xxxiv, No. 4,

Tissues could not be kept alive in adult plasma for more than 3 months even after careful removal of waste products by washing and transfer. Evidently adult plasma does not contain the substances necessary for the indefinite multiplication of cells. In more recent experiments there was no evidence that serum protein may be considered as intermediary products between food proteins and parenchyma proteins.

The addition of embryonic tissue juice to an adult animal plasma activates cell division and brings on an immense increase in tissue mass. The author has a strain of fibroblasts derived from a small fragment of embryonic heart that has produced about 30,000 cul-



tures in the past 9 years, and is as active today as at the beginning of its life. If this strain had been allowed to grow freely, the volume of tissue so produced would be larger than the earth. There is no doubt that in the addition of embryonic juice to adult plasma the new cells are made from the substances contained in the media, and that this process can go on indefinitely.

In this article the authors investigate the source of the substance used by the fibroblasts cultivated in adult serum alone, and what constituents of the medium are responsible for the increase of the mass of the tissue when embryonic juices are added to the plasma.

Numerous experiments were conducted. In one group fragments of embryonic heart and of a nine-year old strain of fibroblasts were cultivated in media containing varied dilutions of serum. In a second group the rate of growth was observed in plasma. Studies were made of the influence of serum of fibrinogen and of embryonic juice.

The authors attribute the temporary increase of fibroblasts cultivated in the plasma of an adult animal as not due to the serum but to the embryonic juice within the tissue itself.

There is a definite relation between the rate of growth and the concentration of the embryonic juice in the medium.

H. M. FEINBLATT.

PALMER, G. T.: Ventilation, Weather, and the Common Cold. A Study of the Prevalence of Respiratory Affections Among School Children and Their Association with School Ventilation and the Seasonal Changes in Weather. *The Journal of Laboratory and Clinical Medicine*, September, 1921, vi, No. 12, p. 684.

The author concludes that respiratory sickness is no greater in a window-ventilated schoolroom kept around 59° F. (15° C.) than it is in a room where temperature is 64° F. (17.33°C.).

Respiratory sickness is greater in fan-ventilated rooms, such as are represented in this study, than in window-ventilated rooms, even though there is not more than a degree difference in temperature, and the fan-rooms are more spacious.

It is low temperature rather than chemical purity of the air which conveys the sensation of freshness.

C. M. ANDERSON.

CARREL, A., AND DU NOUY, P. L.: **Cicatrization of Wounds. XI. Latent Period.** *Journal of Experimental Medicine*, October, 1921, xxxiv, No. 4, p. 339.

The latent or quiescent period is that interval extending from the time of traumatism to the beginning of contraction. A study is made of the period, its duration and transition to the period of contraction.

Quiet-tempered dogs were used in the experiments and after proper preparation, wounds of geometric shape were made and changes in surface area determined. The width of the wound in centimeters, or its area in square centimeters, is plotted in ordinates and the time in abscissæ. The duration of the latent period was found to vary between 5 and 7 days, and was found to be easily affected by many local causes; it was found to stop abruptly and contraction occurred with maximum velocity.

The formula of de Noüy applied to the beginning of contraction as well as to the subsequent periods.

H. M. FEINBLATT.

GAUSS, H.: **A Colorimetric Method For the Estimation of Morphin in Colloidal Mixtures and Tissues.** *The Journal of Laboratory and Clinical Medicine*, September, 1921, vi, No. 12, p. 699.

The author summarizes as follows: A quantitative colorimetric method for the estimation of morphin sulphate in tissues and organic colloidal mixtures is described.

There is a preliminary precipitation of the proteins by means of ten volumes of 3 per cent trichloroacetic acid and subsequent extraction with hot chloroform.

The color utilized in this reaction is the purple red reaction with Marquis' reagent which is evanescent. The standard color is prepared by adding a known amount of the alkaloidal salt to a known volume of Marquis reagent, similarly and simultaneously with the preparation of the unknown.

By means of this method the authors have been able to extract quantitatively morphin sulphate from tissue and colloidal solutions in amounts from 0.10 to 50.0 milligrams and to determine it colorimetrically in amounts as low as 0.003 milligrams.

C. M. ANDERSON.



BAILEY, C. V.: Apparatus Used in the Estimation of Basal Metabolism. *The Journal of Laboratory and Clinical Medicine*, September, 1921, vi, No. 12, p. 657.

The increasing interest in basal metabolism as a means of diagnosis has raised many questions as to the type of apparatus most suitable for this test. The physician naturally craves a small portable apparatus which can be carried from house to house and used with the same ease and accuracy as his blood-pressure apparatus and his clinical thermometer.

The authors describe an apparatus used in determining the respiratory exchange in man. The arrangement described is suitable for routine laboratory or institutional use in determining the basal metabolism. The particular features are the use of the full-sized gas mask, the special arrangement of rubber flutter-valves, a newly designed gasometer, the use of a new type of gas-sampling bottle in conjunction with the Henderson-Haldane gas-analysis apparatus, a detailed description of the construction and use of the latter, with several added mechanical features which greatly lessen the labor of gas analyses.

C. M. ANDERSON.

## SECTION ON PEDIATRICS

FELICIANGELI, G.: **Ludwig's Angina in a Hemophiliac** (Su di un caso di angina di Ludwig in soggetto emofiliaco). *Il Policlinic* (Sez. prat.), January 3, 1921, xxviii, 8.

The author gives a case of post-operative happenings and treatment in a case of Ludwig's angina. It was a case of emergency operation. Chloroform anesthesia was administered for 2 minutes, and 5 grams were given. Severe asphyxia ensued, and the author thought he might have to resort to tracheotomy. Instead two paramedian incisions, 6 cm. long, along the inner borders of the front parts of the digastric and the mylohyoid and geniohyoid were made. They were black and asphyxiated. Dark blood flowed from the incision. A rubber drain was inserted, and iodoform gauze packing applied. No hemostats were necessary, and the condition of asphyxiation which lasted only a few minutes after the incision was made, gave place to a good condition. One hour later profuse hemorrhage occurred. It came from the subcutaneous membranes about the incisions. The wound was packed and hypodermoclysis ensued. Hemorrhage continued some time, but in the morning the patient was in a good state; temperature  $37.6^{\circ}$  C. ( $99.8^{\circ}$  F.); the edema was less; pulse 102.

The child had suffered some traumatism of the head, and ever since had suffered from hemorrhages. Neither ergotin, adrenalin, gelatin, pepton, nor antidiphtheritic serum (which was used, because simple serum was not available), in various doses, and administered in various ways were of effect. This condition lasted six days. The author then sutured the two wounds with coarse catgut. The immediate effect was good, but two days later there was an increase of swelling, and some more hemorrhage. Then 200 c. c. of blood were injected into the veins. The effect was marvellous. Transfusions of horse serum were then made daily. The patient rallied.



FREISE, E., AND RUPPRECHT, P.: **Value of Accessory Vegetable Food-stuffs in the Nutritional Therapy of Rachitis** (Über die Bedeutung accessorischer Nabrstoffe aus Vegetabilien für die Ernährungstherapie der Rachitis). *Medizinische Klinik*, 1921, xvii, 16.

The case was that of a rachitic child who, when first seen, was six and a half months old. Face and entire skin were pale. Abdomen slightly bloated. Poor muscle development; tonus moderate. The skull was asymmetrical. The left front tuberosity sprang decidedly forward. The large fontanelle was three fingers' breadth wide. The skull bones gaped wide apart, so that the coronary suture was perceptible like a fissure to the level of the eye; the sagittal suture gaped towards the upper edge of the forehead, towards the back to the little fontanelle. The largest skull circumference was 39 cm. (15.5 ins.). The skull bones of occipital portion were slightly impressionable. The cartilage-bone borders of the ribs showed noticeable thickening. The internal organs showed no peculiarity. The static motor functions were very slightly developed. There was great improvement during the treatment which was nutritional. The calcium balance held itself in direct opposition to the phosphorous balance. In the most important period there was regular elevation of the original low points—lying below the normal value of 0.174 grain CaO per diem. The CaO balance which in the later period was arrested, here at first, came evidently into expression. It is also depressed in a general direction, as the influence of the vegetable extract on calcium and phosphorus differs. The uniformly negative result of the period with heated extract makes it appear that the mineral content is without affect on the changes in phosphorus and calcium retention in these experiments.

BLODGETT, S. H.: **Diabetes in Children.** *Archives of Pediatrics*, 1921, xxxviii, 73.

The diabetes usually occurring in children is the form where the pancreas is primarily affected, and is an organic condition; it is usually due to an infection of the pancreas and the germ frequently enters through the tonsils. It may occur at any age. The onset is sudden, the excessive thirst and polyuria may be definitely noted

to have begun within an interval of 24 hours and the child frequently has had an infection affecting the tonsils within a short time; there follows increased appetite and progressive, and at times, great loss of weight. The skin is dry and harsh, the tongue dry and sometimes brown; generally a "sore spot" is discovered on deep pressure over the region of the pancreas.

The urinary findings are characteristic, large amounts of normal-appearing urine, specific gravity from 1020 to 1045, slight trace of albumen, maybe none at all, large amounts of sugar from 20 to 500 grams, according to age and virulence of attack, considerable to large amounts of acetone and frequently diacetic acid; if there is infectious nephritis, there may be small amounts of albumen and some casts.

When the pancreatic form is found and it is of recent origin and is progressing steadily, with loss of weight and symptoms showing a steady, rapid progress we must limit the diet, as regards carbohydrates, very decidedly. If the child has had the symptoms for a longer time (weeks or months) without harm to his general health and the urine has been sugar-free at times on a partially restricted diet, we need not be so rigid as regards carbohydrates. Many children can take considerable amounts of raw and cooked milk without causing sugar to appear in the urine; the children crave something sweet and it will help keep them contented if we can give them some custard or ice cream sweetened with saccharin. The author has never seen any harmful effects from its use.

Do not put these cases on a so-called "starvation" diet. The author's experience has been that it will hasten the coma and death.

Have the throat, especially the tonsils, examined by a competent man. If this is not done, it may happen that after the urine has been sugar-free an infection in the tonsil will increase it. Prognosis depends upon how much tolerance the patient has and his previous health, where the output of sugar in the urine is more during each 24 hours than would correspond with the intake of carbohydrate and it is very hard or impossible to get the urine sugar-free; the prognosis is very poor. On the other hand if the urine can be easily made sugar-free and the patient shows a tendency to increase in weight, the prognosis is fair.

If there has been no sugar for six months or longer don't feel confident the child is well and can eat anything; be very cautious in in-



creasing the carbohydrate content of the food if the child is developing properly. Don't forget that children on a strict diet are sorely tempted to take forbidden food on the sly (usually a "sweet"). Think of this; if sugar unaccountably appears in the urine, treat each case individually.

LOWENBURG, H.: The Frequency of Pyelitis in its Relation to the Nosology of So-called Obscure Temperatures in Infants. *Therapeutic Gazette*, July 15, 1921, xlv, No. 7, p. 460.

Pyelitis in infancy merits a more important place and should be on a par with acute otitis media in causing temperature in the young, especially females. This disease, common enough in infancy, is frequently overlooked by the general practitioner, because the simple yet important procedure of examining the urine of infants is overlooked.

Acute pyelitis occurs chiefly in female children; Still (*Common Diseases and Disorders of Childhood*) in 28 cases under one year, found but three occurring in boys; of fourteen older children, all were girls; Holt (*Diseases of Infancy and Childhood*) states more common frequency among girls. The chief infecting germ is pollen bacillus, which occurs in from 90 to 95 per cent of the cases. In all of the author's cases this organism was present, usually in pure culture, in a sharply acid urine. Where other organisms occur there is usually a secondary infection from perinephritic abscess, rupture of the psoas abscess in the kidney pelvis, renal calculus, etc. All these diseases, however, are rare in childhood. They may furnish streptococci, staphylococci, diphtheria bacilli, pneumococci, tubercle bacilli; in these instances the urine may be alkaline.

Symptoms may begin abruptly with a high fever, in an otherwise up to now healthy infant; convulsions and cyanosis may occur; vomiting is sometimes intense and persistent; diarrhea is often encountered. These phenomena are the result of secondary features, where, because of infection, food tolerance is diminished. This secondary complication should not be allowed to mask the primary trouble—pyelitis.

*Urinary Findings.*—Contain traces of pus; this, as indicated above, is due to infection of colon bacilli, with possibly the secondary

infection of other germs as streptococci, staphylococci, etc., which have come from some other process, as abscess, psoas or perinephritis. An infant with vaginitis may show many such and not be a sufferer from pyelitis; where the number of pus corpuscles are over eight or ten, it should create a strong suspicion of pyelitis, especially when found in an acid urine, obtained by catheter.

*Diagnosis.*—Depends upon results of urinary examination, although cystoscopy and ureteral catheterization are accessory helps. The urine should not be centrifuged by microscopic examination as then results will be misleading; a drop or two of urine is sufficient to determine the presence or absence of pus; catheterization with a soft-rubber No. 8 to 10 French catheter is easily accomplished, both in male and female. Where it is difficult to catheterize, collect urine by placing infant on a piece of rubber oil cloth.

*Differential Diagnosis.*—Pyelitis must be distinguished from acute gastrointestinal disease, meningitis, appendicitis, pneumonia, otitis media, typhoid fever, dentition, cystitis, or in fact any disease with a high temperature; this is distinguished only by a carefully conducted routine examination of the urine.

*Treatment.*—Potassium citrate, or other alkalinizing agent, must be given in dosage sufficient to produce complete alkalinity; this must be maintained over a period of time sufficient to clear the urine from pus and colon bacilli. This is practically a specific. Author used potassium citrate in doses of 20 grains (1.3 grams) every two hours, day and night, in an infant 7 months old, who had previously been sick a month with an unexplainable temperature. It was then in a semi-comatose state; this treatment appeared to be a lifesaving process. Citrate and gradually diminishing amounts were continued for a year, until the organisms and pus corpuscles disappeared. Instead of potassium citrate, sodium citrate, or sodium bicarbonate may be used, with the precaution to avoid alkalinosis. This is indicated by edema of the eyelids, drowsiness, twitchings, carpopedal spasms, and the electrical and reflex phenomena of spasmophilia. The drug should be withdrawn or the dosage reduced when these symptoms appear. Hexamethylamin has given the author no encouraging result. Vaccines seem to help in some cases; they must be autogenous and given fresh in large doses over quite a period of time.



No case of illness should be regarded as having been carefully studied unless the urine has been examined.

Permanent success means that the alkaline reaction must be kept up for sometime, especially if the colon bacillus is found.

Relapses are treated as primary attacks.

Cases clinically well, but still showing pus and bacilli in the urine, resisting all treatment, should be studied with the cystoscope and ureteral catheter. Cystoscopy and ureteral catheterization are much neglected and need developing.

**BROWN, W. S.: Banti's Disease in a Child.** *Medical Journal of Australia*, February 26, 1921, 1, No. 9, p. 172.

*Case.*—Girl, 9 years old; complaint constant colds; very pale and weak; father previously had pernicious anemia.

*Examination.*—Pallor of skin and mucous membranes marked; spleen enlarged to level of umbilicus; every thing else normal, except secondary anemia with leukopenia. Differential count showed white cells varied over a period of two months, from 2,200 to 13,400. The neutrophils varied from 54 per cent to 82 per cent; lymphocytes from 14 per cent to 44 per cent; eosinophils from 1 to 5 per cent. Numerous megaloblasts and much anisocytosis, during the time of the leukocytosis.

*Treatment.*—Removal of a large spleen under anesthesia; few adhesions, patient made rapid and progressive improvement.

**MILLS, H. B., ASNIS, E. J., AND BABCOCK, W. W.: Report of a Case of Splenomegaly (Gaucher's Disease?).** *New York Medical Journal*, April 20, 1921, cxiii, No. 12, p. 589.

*Case.*—Boy, 3 years old; marked abdominal enlargement; father dead, pulmonary tuberculosis; mother, brother and sister, alive and well. Present history began at the age of one year, with spasms, four during one night, caused by "indigestion". From then on there was rapid and progressive enlargement of abdomen. Marked constipation and poor digestion.

*Examination.*—Skin yellow-brown; marked perspiration; both

ears discharging; marked pulsation in the neck; marked dyspnea; heart and lungs normal; liver enlarged; spleen enormously enlarged; extremities show petechial hemorrhages. Eyes, no marked pathology; conjunctiva, anemic; fundus, marked pallor throughout. Von Pirquet and Wassermann reactions negative. X-ray showed enlargement of spleen and liver, but no information as to etiology. Blood color, 35 per cent; red cells, 2,112,000; white cells, 8,400; anisocytosis, present; polychromatophilia; macrocytes; normoblasts, occasionally; small lymphocytes, 35 per cent; large lymphocytes, 13 per cent; large mononuclears, 4 per cent; polynuclear-neutrophils, 43 per cent; basophils, one per cent; transitional, 4 per cent. Blood of patient and mother found to belong to group IV.

Mandlebaum and Brill (*Amer. Jour. of Med. Sci.*, 1913, p. 863) give the following symptoms, which were found in this case:

Onset, insidious; age, before twelve; enlargement of liver and spleen, making the trunk barrel-shaped; color of exposed skin, yellowish-brown; numerous ecchymoses; marked perspiration; ascites slight. The following symptoms usually present, absent in this case: female sex; familial occurrence; brownish-yellow wedge-shaped thickening of conjunctiva; bleeding mucous surfaces; leukopenia. Banti's disease was thought of, but this is rare before ten; the discoloration of skin is not present; the spleen does not reach the size it does in Gaucher's disease.

*Treatment.*—Blood transfusion, 200 c. c. of citrated blood from the mother; operation, under local anesthesia, with small amount—2 ounces—of ether. Spleen weighed 1,800 grams; capsule smooth, not thickened; dark red color. Histologically, enormously dilated sinuses; cells lining them, large and swollen; pulp, infiltrated with endothelial cells, with areas of pigmentation irregularly distributed.

Dr. Mandlebaum, of New York, examined sections of the spleen and stated it was not Gaucher's spleen, in his opinion, but some form of leukemic splenomegaly.

*Result of Operation.*—Temperature became normal; apparently doing well after leaving hospital, but died suddenly about a month later; cause of death could not be ascertained.



MCCREADY, E. B.: **The Delicate Nervous and Backward Child as a Medical Problem.** *Medical Record*, January 15, 1921, xcix, 85.

The majority of neurotics, psychopaths, and physical ineffectives are characterized by an inferiority of constitution which is the end result of a series of factors initiated in early childhood and even before birth which if they had been recognized early and proper steps taken could have been corrected.

Pedology is the branch of pediatrics in which the physical and mental defects of child development are especially studied and treated by the physician. These defects are the result of interference with the normal processes of growth from hereditary or environmental causes or both.

The causes of constitutional inferiority as stated by Noble are hypoplasia or degeneration.

(1) Hereditary hypoplasia, due to defect in chromosomes of the ovum or spermatozoon of parents.

(2) (a) Environmental hypoplasia: due to toxemia in parent or parents, affecting (by poisoning) the ovum or spermatozoon, or both, giving rise to a defective impregnated ovum or germ. (b) Preconceptional environmental hypoplasia or arrest: due to toxemia in the mother or to local disease in the endometrium, leading to poisoning of the germ, embryo, or fetus, or to insufficient nutrition of the developing ovum. Antenatal, intrauterine hypoplasia.

(3) Mixed hereditary and environmental hypoplasia: due to toxemia in the parent or parents, themselves examples of hereditary hypoplasia, before conception, or to toxemia, or to uterine disease, in the mother during pregnancy, or to bad environment leading to disease in postnatal life, in children of parents having hereditary hypoplasia.

"With exceptions, those suffering from hereditary hypoplasia are either continuously hyperenergized or are alternately hyperenergized and lethargic—or in the wanderlust group." It was formerly spoken of as hereditary diathesis or dyscrasias, gout, diabetes, tubercular tendency and the nervous diathesis.

"Environmental hypoplasia may be general or specific as to organ or systems of organs, or diathetic in type." It is associated with a lessened capacity to develop energy. The group is subenergized.

"Early interference with the natural forces of growth by any vitiating influence modifying cell development becomes aggravated by reason of the interrelation and interdependence of the various systems of body cells as the ductless, glandular and vegetative nervous systems." The cells of the endocrine system, imperfectly vitalized, fail to secrete and the ensuing deficiency in hormonal stimulation results in further defective development, hypoplasia, infantilism in varying degree.

In the gross somatic manifestations of hypoplasia are found:

(1) Abnormalities in size and shape of head. Softening or bossing of cranial bones. Gaping or premature closure of fontanelles and sutures. Distention or sinking of fontanelles.

(2) Malformation of ears.

(3) Anomalies of eyes or lids. Drooping of lids.

(4) Malformation of the nose.

(5) Malformation of the face.

(6) Malformation of long bones.

(7) Umbilical hernia; diastasis recti abdominis.

(8) Anomalies of genitalia.

(9) Malformation of anus and rectum.

When our knowledge of endocrinology is more complete we may be able to trace the retardations of function, etc. back to the early intrauterine existence.

Prof. Arthur Keith holds that the endocrine glands not only serve the purpose of immediate regulation, but they govern to a great degree the autogeny of the human traits used for differentiating the various races of mankind. Stigmata found in constitutionally inferior individuals which are not so obvious as the above-mentioned ones may be grouped under: (1) Anatomic, (2) physiologic, and (3) psychic variations.

Among the anatomic variations are retardatism in growth rate, under-weight or obesity, hypertrichosis, muscular ocular anomalies, defective teeth, undeveloped genitalia, etc.

Among physiological variations are cold and clammy skin, subnormal and unstable temperature, undue dryness of skin, anemia, constipation, dysmenorrhea, stammering, etc.

Among the psychic variations are hypermotivity, delinquency, negativism, night terrors, obsessions, etc. The treatment of con-



stitutional inferiority may be divided into: (1) Prophylactic, (2) hygienic, (3) medical and (4) educational.

Prophylactic measures date from an earlier time than conception. Hygienic living on part of parents does much towards insuring the integrity of individual germ cells. After conception the responsibility rests on the mother. Upon antenatal hygiene rests in a large degree the stability of the race.

Prospective mothers should be examined for evidence of lues and treated as indicated. The period of infancy equals the prenatal period for the importance of prophylaxis. Nutritional disorders in this period cause interference with the forces of correlative growth. The histories of delicate, nervous and backward children almost invariably present a record of intestinal interferences during the first year. Studies in nutrition have shown the necessity for incorporating in the diet of the developing child, food substances rich in vitamin content and mineral salts. The author is convinced that much physical and mental instability in late childhood is due to early dietary habits and protests against the high carbohydrate diet for infants and children. The development of the body tissues is dependent upon the nutrition of the individual cell and its nutrition depends upon a pure rich supply of blood. The author has found that though constitutionally inferior children will slowly grow and gain weight on a diet free from animal proteins, they remain anemic, but they develop at a more normal rate when animal tissues are added to the diet. The digestive functions of a child develop through exercise so that many adult ills are traceable to the pampering of this function in childhood.

Fears of parents lead to restriction of diet which often result in malnutrition. A child of twelve, receiving the proper amount of exercise and fresh air can easily consume 3,500 calories a day. A child often has too large a carbohydrate diet which causes an evanescent energy but fails to provide for tissue wear and tear, blood genesis, growth and storage of energy.

Next to diet, fresh air (air in motion), bathing, proper hours of sleep, exercise, clothing, all have an important place in the prophylactic and hygienic management of the hypoplastic child.

The indifference of the medical profession concerning this important phase of preventive and remedial medicine is due to the impression that purely medical measures are of secondary and doubt-

ful importance in the treatment of these cases and has driven these patients into the hands of Christian Scientists, Osteopaths, Chiropractors, etc.

The first requisite to effective treatment is the removal of possible source of focal infection and reflex irritation. Thus surgical removal of adenoids and diseased tonsils, eye-strain, abscessed teeth, etc. is an important therapeutic procedure. An important surgical measure is the relief of increased intracranial pressure as cerebral hemorrhage in early life is a productive cause of mental and physical instability.

Practically every organically inferior child presents symptoms which are referable to the endocrine system, to the vegetative nervous system, and to the blood-making apparatus.

The clinical syndrome in young children is usually one of sub-oxidation furnishing definite indications for therapeutic intervention. Through the use of a number of well-known drugs—mercury, strychnin, caffein and digitalis among them—the adrenals may be stimulated to increased activity and in cases where the hypodrenia is developmental in origin these drugs may be given to advantage, but in those where the lessened activity is the secondary result of an acute or chronic hyperactivity the burden should be taken off the adrenals by adding to the adrenalin content of the blood and vicarious stimulation of metabolism, through the use of adrenalin chlorid, hypodermatically or by mouth and the administration of suprarenal gland, supported by small doses of thyroid and with pituitary and the gonads.

Syphilis in the forebears is prone to affect the endocrine glands; mercury is indicated in these cases with small doses of thyroid, or iodine to enhance its activity. Arsenicals, because of their depressing action upon the chromaffin systems, should not be used in congenital lues, except in early cases with active lesions, and in juvenile neurosyphilis when mercurial treatment has failed.

Acute acid conditions must be met by the exhibition of alkalis but the cause should be removed through the sustained stimulation of tissue oxidation.

Impairment of function of the chromaffin system leads to imbalance of function of the vegetative nervous system. Atropin or belladonna in full physiological dosage is sometimes a valuable



remedy because of its sedative action upon vagotonic irritability. Atropin and adrenalin are useful in some varieties of stuttering.

A large class of unstable children who present symptoms of thyroid toxicosis respond well to proper regulation of hygienic influences (including diet), to rest, and small doses of bromids and to arsenic.

An almost constant accompaniment of constitutional inferiority is a hemic dyscrasia (blood more or less of a fetal type). This is a cause and a result of defective correlative growth and must be met by stimulations of the blood-making organs to increased activity. Iron is valuable to this treatment.

Educational management of constitutionally inferior children is synonymous to mental hygiene; so it is important that the environment of the inferior child be regulated by one who is cognizant of his constitutional variations.

The susceptibility and response to psychic trauma are conditioned by the somatic integrity of the individual. Imagination in a child should not be suppressed but it should be guided. Common sense should be developed.

The country is the ideal place to carry on the education of the hypoplastic child, away from the excitement and noise of the city. The hypoplastic child should come in contact with the concrete, the study of natural phenomena, and demands should be made upon initiative and self reliance.

BURR, C. W.: *The Nervous Child*. *New York Medical Journal*, August 17, 1921, cxiv, 205.

Dr. Leonard G. Guthrie divides neurotic children into two great classes: (1) The unrestrained emotional type, the child who makes no attempt to control or hide his emotions, and (2) the restrained emotional type, the child whom pride compels to pretend stoicism. In the first class, the intellectual power usually is above the average but emotionally the child is a bundle of contradictions. They are usually imaginative, superstitious, timid, worried by trifles, learn quickly but forget instantly. Insanity often closes their lives.

Children of the second type have strong emotions but try to hide all signs of feeling. They are observant, intelligent but reticent,

dull and obstinate. They become incurable sexual neurasthenics, hypochondriacs, delusional lunatics.

Both types are prone to be peevish infants and are subject to tics at seven to ten years. They are capricious and hard to feed. They are not very subject to St. Vitus dance. Adults who have hysteria or some mental disorder have often been treated for tic as a child.

Children of both types are victims of an abnormality of personality. Personality is the sum of a person's intellectual ability, his moral sense and his emotions.

Heredity is the fundamental factor in the formation of personality. Knowledge seems to indicate that certain of the endocrine glands have much influence on personality and one talks of hyperthyroid and hypothyroid people.

The nervous child of the first type may become a poet, a musician, an artist, but never a great administrator, statesman or leader among business men. Or he may be a Bolshevik, or amateur or professional sociologist.

From biographical literature we learn a little of the nervous child.

Lord Byron's mother was passionate and given to shrieking. He was an only child and possessed a violent temper. Mentally he developed quickly; he was high spirited and passionate.

Nietzsche's father was insane and he was supersensitive. Shelley was sensitive to pain and subject to paroxysms of passion.

The treatment of the nervous child is important. One can do much to help him find a permanent healthy balance.

Nervousness depends upon emotional instability, lack of inhibition, absence of will, enslavement to impulse. One object of treatment, is to strengthen the will and dethrone the tyrant impulse.

The writer protests strongly against psychoanalysis. The real treatment is a matter of education different from mere school training.

Parents must get away from belief that life must be made easy. One must cast aside the doctrine that to save a boy, one must remove all temptation. He must be made strong to fight against evil. We must teach truth.

Children who want to work should do so as it is useless to hold them in school. Years of idleness in school make them lazy. A boy should learn self-control, a love of truth and a desire to work to become a man.



FOOT, N., AND LADD, W.: **Report on a Case of Gaucher's Splenomegaly.** *American Journal of Diseases of Children*, 1921, xxi, 426.

So far, only 22 cases of this disease have been found in literature. The first was described by Gaucher in 1882; the next by Picou in 1896, Collier, in England having published a case in 1895. Boviard was the first American to describe it. In 1906 Schlagenhauser reported the first German case. F. S. Mandelbaum, of New York, has perhaps done most for a pathological description. Brill and Downey worked along this line extensively. According to the latter the disease occurs most frequently during childhood, may be familial, is accompanied by a progressive enlargement of the spleen, and an enlargement of the liver. Face, neck and hands are often discolored to a brownish-yellow. There is wedge-shaped thickening of the conjunctiva, like pinguecula, usually beginning on the nasal side and appearing later on the temporal apices at the outer rim of the cornea. The disease runs a prolonged, chronic course with surprisingly little functional disturbances. Later in the disease there may be a tendency to bleeding of the nose, bowels or uterus. There are: leukopenia, and ultimately, anemia of the chlorotic type, occasionally sweating, abdominal pain, pain in the legs. Females have been affected more frequently than males, though more male cases have been reported.

In the onset there is a slight dragging pain or enlargement of the spleen. The average blood-counts show: hemoglobin, 63 per cent (from 35 to 92 per cent); erythrocytes, 6,000,000, later 3,700,000; leukocytes, slightly decreased; polymorphonuclears, 66 per cent; macrolymphocytes, 13 per cent; microlymphocytes, 20 per cent; eosinophils, 1 per cent; mast cells, from 0.5 to 0.8 per cent. The large cells, peculiar to the disease are never found in the circulating blood; there are no nucleated red cells. Duration is 19.3 years on the average; it may be much longer, patient usually dying from some intercurrent infection.

*Pathology.*—Disease is limited to the hematopoietic system; at first in spleen, spreading to the regional lymph nodes of the mesentery and retroperitoneal groups, involves the bone marrow and appears in the radicles of the portal vein and in the perilobular connective tissue of the liver, where it is confined to Glisson's capsule. Spleen much enlarged, usually, may extend to left iliac fossa from

the diaphragm; usually smooth, firm and apt to show one or more deep notches in its anterior margin; section color, pale grayish pink with minute semitranslucent areas about one millimeter in diameter scattered over the cut surface uniformly. Some hemorrhagic areas of small size are also found; rarely evidence of necrosis, but only where tuberculosis is associated. Liver is enlarged, section showing fine network of fine pale strands running between the lobules; brownish in general tone, cutting with increased resistance. Lymph nodes of mesentery and retroperitoneal region are enlarged and pale, resembling cut spleen on section. Bone marrow is grayish-red and strewn with tiny, whitish specks, similar to those seen in the spleen.

Microscopically, picture is similar in all these organs; many large ovoid cells, with small nuclei, somewhat vacuolated cytoplasm, lie in the venous or lymphatic sinuses, or in the meshes of the tissue.

*Case.*—Boy, 8 years, suffering from persistent sweating, sudden loss of weight and anorexia; family history, negative; previous history, between second and fifth year had five attacks of unconsciousness (probable epilepsy), which occurred two or three times later; was treated five years ago for loss of weight, anorexia and restlessness, also some feverishness and severe headaches; fulness of left flank was noted at this time. Two years later brought in again with persistent vomiting, poor appetite, sweating profusely at night in bed, also in day time when exerting himself slightly; severe frontal headaches daily; nauseated, vomiting but once; night terrors, was very irritable; spleen 1 cm. below costal margin; liver palpable just below costal margin. Blood count, then showed hemoglobin, 80 per cent, leukocytes, 9,600; differential, normal.

*Present Illness.*—Had just recovered from mumps and measles; all symptoms increased, especially nervousness and vomiting; complained also of seeing "colored balls" before his eyes, and "having shocks" over his entire body. On examination, large, smooth, painless tumor with dullness in left hypochondrium to angle of left scapula and 8 cm. to the left of the mid-sternal line was found; palpable 4 cm. below the costal margin in the left nipple line; blood count now showed hemoglobin, 90 per cent; erythrocytes, 5,808,000; leukocytes, 6,600; polymorphonuclears, 49 per cent; macrolymphocytes, 19 per cent; microlymphocytes, 30 per cent; mononuclears, 3 per cent; Wassermann, negative; temperature, subfebrile, averaging 99° to 100° F. (37.22° to 37.88° C.).



*Treatment.*—Exploratory laparotomy showed large smooth spleen, two accessory splenules, one of which was excised from the omentum. Report from laboratory “typical of Gaucher’s splenomegaly”. Spleen and remaining splenule were removed; patient made an uneventful recovery, stitches being removed the eleventh day. Five months later the patient was found to have gained 8 pounds, much improved in health, sweating practically gone. Digestion nearly normal. Attended school regularly; blood examination showed: hemoglobin, 80 per cent; erythrocytes, 4,976,000; leukocytes, 18,800; polymorphonuclears, 48 per cent; lymphocytes, 41 per cent; mononuclears, 10 per cent; and eosinophils, 1 per cent. No abnormal reds.

*Pathological Report.*—Microscopically, the spleen could hardly be recognized, being so strikingly altered by the interpolation of the large cells typical of this condition. They filled the venous sinuses and pulp spaces so as to resemble an alveolar tumor; varied from 17 to 35 microns in diameter, roughly ovoid in shape; cytoplasm pale, with one deeply staining occasionally. A pale reticulated structure with fibrils running in a longitudinal and roughly parallel fashion, from pole to pole of the cell, often containing inclusions of a hyalin nature in the form of hyalin masses or droplets in the cytoplasm of the Gaucher cells. They give practically the same staining reaction as does collagen—bright red with eosin methylene-blue, brownish red with Van Gieson’s stain and phosphotungstic acid, hematoxylin sections, indigo blue with Mallory’s anilin blue, connective tissue stain, dirty to bluish green with Weigert’s elastic tissue stain and blue with ferrocyanid of potash. Unstained section showed faint brownish yellow. They do not react with sudan III or Nile blue. They are not confined to the cells, but lie about among them filling the cytoplasm of the smaller cells, the nucleus being crowded to one side. Sometimes no nucleus can be made out, the bodies appearing like empty hulls. These hyalin-like inclusions appear at first like small branching masses, suggesting fibrin, later appearing more swollen and hyalin-like, and are taken up by the cells. The hull-like structures are probably the “shadows” of these cells after they have become necrotic, sometimes badly wrinkled or shriveled, their nuclei in the last stages of karyolysis. The nuclei resemble those of the reticular cells, or of the endothelial cells, being vascular and showing a delicate chromatin reticulum, and one to three larger masses of basophil material, like nucleoli. Stained with eosin methylene-

blue, these nuclei tend toward eosinophilia as do some of the reticular cells. The endothelial nuclei, in cells lining sinuses, do not show this, but stain deep blue.

Mitotic figures are extremely rare in Gaucher cells; only one was found. There are no such dilated sinuses with a comparatively clear lumen, filled mostly with erythrocytes, as pictured in most of the cases in the literature. But the whole field seems composed of irregular alveoli, filled with large, pale reticulated cells. Occasionally erythrocytes are found, apparently phagocytosed by the Gaucher cells, lying in vacuoles in the cytoplasm of the latter. Two forms of pigment are found in cytoplasm of the Gaucher cells; one faintly yellow, granular form, and another apparently diffuse and almost invisible; both contain iron in a free state. They scarcely would have been noticed if they had not been spoken of elsewhere and tested chemically. Two familiar lipid stains were used to determine the presence of fat or lipoids; sudan III demonstrated no granules, and Nile blue gave no typically granular reaction.

The splenic capsule and trabeculae are not much thickened, the amount of elastic fibers is apparently normal, no increase in connective tissue elsewhere in the organ; malpighian corpuscles are, as a rule, small, occasionally one being found with a large, well-developed germinal center, showing active mytosis among the macrolymphocytes, which are larger and more vesicular than usual; rarely gigantic cells of this type with very large, somewhat lobulated, vesicular nuclei are found. Gaucher cells are found lying singly near the periphery of the centers and containing many small, basophil bodies. Mandelbaum, F. S.: (Flamming's "Tingible Körperchen". *Am. J. M. Sc.*, 1919, clvii, 1366). The lymphoid reticulum is sometimes swollen and hypertrophic with comparatively few Gaucher cells in the germinal centers.

There is a network of strands of more normal pulp between the alveoli of the Gaucher cells, showing a marked increase in eosinophil leukocytes, of both polymorphonuclear and myelocytic types; plasma cells are abundant. Occasionally typical megakaryocytes and cells resembling them, but more like tumor giant cells of Hodgkin's granuloma.

The endothelium of the venous sinuses tends to desquamate, becoming very hydropic and swollen. There are many cells resembling plasma cells, only larger with irregular, ameboid outlines; their



nuclei are of the lymphocytoid type, cytoplasm dense and slightly basophilic. These do not fit into a transition scale between lymphocytes and Gaucher cells. The pathology of the two accessory spleens is quite analogous.

The clinical symptoms in this case are the rare ones, there being no skin discoloration, no hemorrhage, but little enlargement of liver, and no conjunctival symptoms.

There is little to say as to the causes of the disease, nor what processes it represents.

NASSAU, E.: **Monosymptomatic Hematuria in Children** (Über monosymptomatische Hamaturien im Kindesalter). *Zeitschrift für Kinderheilkunde*, 1921, xxix, 133.

Elimination of the red blood corpuscles by the urine with an appropriate number of leukocytes and albumin, are seen in two forms in infancy. These phenomena may be a part of a pathological urinary content, usually associated with severe organic changes of the kidneys and the organism. Or they may be found independently as the only symptom. The significance of the latter is not yet known.

In infancy, hematuria forms, under mechanical nutritive and infectious-toxic conditions, which change the organism. Concussion of the body may, in the child, as well as the adult, cause elimination of albumin and blood in the urine. During puberty, the upright posture will cause elimination to albumin which may disappear on assuming the horizontal. Goetzky finds erythrocytes in patients with orthostatic albuminuria only where there has been some previous infection in the child's kidney. This symptom usually disappears after a few days. Orthostatic albuminuria we think exists where there is no hypertension or cardiac hypertrophy, and where albuminuria or the elimination of urine will cease, when in a lying posture.

In children, especially at the time of puberty, there is a tendency of albuminuria and hematuria, which are dependent on the general disposition (which is found in about one-third of our children), and which often is seen in the asthenic appearance. There is, furthermore, in the child, a physiological tendency of vessel permeability, which will cause hemorrhage in the kidney tissue. It seems that in

early childhood, the vessel walls do not permit the red blood corpuscles to pass after a mechanical insult. Therefore, in later childhood, such insults will cause hematuria.

At certain times of the year, diet, in a certain number of incidents, will cause increased permeability of the vessels for the red blood corpuscles. This nutritive form of monosymptomatic hematuria is seen in a typical manner in Barlow's disease. Hess has given a diet containing much vitamin. This author has attributed the effect of this pyrimidin-group, mainly as of a diuretic nature. Similar defective conditions of the vessel walls are seen with insufficient nutrition. There may be idiopathic hemorrhages of the tegument, the mucus membranes of the mouth, the connective tissue of the eyes, but never of the periosteum or the gums.

If at the age of one to two years, vitamin has been given abundantly with a mixed diet, hematuria will subside.

During infancy, the kidneys often react by hematuria to infections. It is found in scarlet fever, paratyphoid, varicella, and diphtheria. In measles it very rarely occurs. It often occurs in chicken-pox. The infant may have hematuria, even in mild diphtheritic colds, while the older child will show hemorrhage of the kidneys only in severe cases. It seems that hematuria is rare in influenza infection of children. In infant influenza hematuria may, however, occur where a subsequent pyelonephritis will occur.

Clinically, hematuria of childhood depends upon the age of the patient and the duration of the symptoms. The kidney seems to be more resistant during the latter part of childhood. The kidney of the infant has no resistance. Hematuria of short duration, as it occurs in Barlow's disease, and mild infections, is favorable and usually heals perfectly.

POPPER, J.: **Myatonia Congenita, with Report of Three Cases.** *Archives of Pediatrics*, March, 1921, xxxviii, No. 5, p. 303.

Amyotonia congenita, also called myatonia congenita, or Oppenheim's disease, begins at birth or early infancy due to congenital developmental defect of lower motor neuron and of voluntary muscles. Symptoms are weakness, hypotonia and a quantitatively diminished electrical response in the muscles, usually without disturbances of a



sensation or of mentality. There have been 130 cases reported to date in the literature. Oppenheim first described the disease in 1900; more recently Faber and Reuben in 1917 have reviewed the disease.

**CASE I.**—Male, 2 years old, chief complaint weakness of limbs: nothing of importance in family history, parents are well, aged 27, one other child a girl, 4 years, normal. No history of tuberculosis or syphilis. Mother had no prenatal disturbances, movements (fetal) not active until ninth month; birth at full term, normal, except baby was blue, requiring one-half hour to initiate respiration. Breast-fed, up to 13 months; after that general diet. Convulsions occasionally until 7 months, cried weakly until 6 months. Cut first tooth at 10 months, now has 18. Anterior fontanel closed at 14 months. Has had two attacks of pneumonia, one at 9 months and one at 13 months, each lasted a week, and recovery uneventful; obstinate constipation, no bladder control, unable to speak; has been grinding teeth almost continuously, even in sleep, appetite good, weight 24 pounds.

*Present Illness.*—Mother has noticed slowness of movements since birth, did not reach for objects until 10 months old, for past 8 months using his extremities more freely, unable to hold his head up or sit up.

*Examination.*—Well nourished, lies on back, movements of lower limbs are weak but more active than upper; facial muscles seem intact when crying; in ptosis or strabismus, eyes and ears normal; mouth open due to adenoids; neither thyroid nor thymus are palpable, though cervical lymph-nodes are felt. Chest and heart normal, back shows marked kyphosis entire length, abdomen large, doughy masses felt throughout, showing impaction, liver and spleen normal. No testicles present in scrotum. In extremities,—muscles soft and flabby, though not atrophied, unable to support feet in air. Hypermotility of wrist and metacarpophalangeal joints of thumbs. Both middle toes are held flexed on plantar surface, and overlapped by the toes adjacent to them, feet long and have peculiar puffy plantar pads, which extend beyond os calcis increasing length of foot. Reflexes all absent; Wassermann's on both mother and child negative. Reaction of degeneration was absent; required more current than normal to produce contractions in affected muscles.

*Subsequent History.*—Patient's status remained practically same

until three years old, when he died from a third attack of pneumonia. No autopsy was performed.

CASE II (Previously Reported by Reuben).—Female 5 months old; breast-fed until 4 months old, when mother weaned it because she noticed baby tired easily after nursing a few minutes, and because of that was underfed; also noticed it did not use lower limbs much or turn its body. Baby recognized its parents and reached for objects.

*Examination.*—Bright-appearing infant lying on back; cries are thin and weak; not emaciated; posterior fontanel closed, anterior 2.5 cm. (.984 in.) in diameter; mouth, face eyes and ears, normal; muscles of neck unable to support head; chest slightly narrowed, breathing abdominal almost completely, heart and lungs normal. Back shows marked kyphosis entire length; abdomen normal. Extremities, voluntary motion normal in upper extremities but not very active. Middle fingers held flexed, overlapped by finger on both sides; both ring fingers can be extended backward to right angle; lower limbs lie extended and practically motionless; pricking soles with pin, child cries, but does not move limbs except from side to side; muscles feel soft and flabby, but not atrophied, feet are elongated with so-called plantar pads described above. Reflexes all absent. Babinski weakly positive. Wassermann on mother's blood, negative. Child died of pneumonia at thirty-ninth week; autopsy refused.

CASE III.—Brother of Case II, seen soon after birth, cried lustily, apparently using limbs normally. Seen eight weeks later, showed almost exact reproduction of the action and appearance described above for his sister, little motion of upper and none of lower extremity, weak cry, nearly abdominal breathing, etc. Lost track of case soon after this as mother left town.

SUMMARY.—(1) Disability of lower limbs constant finding.

(2) Inability to sit upright, involvement of muscles of back and pelvic girdle.

(3) Involvement of intercostal muscles, not always present, found in Cases II and III of author's, and in but 15 of all reported cases.

(4) Absence of reflexes in a majority of cases reported.

(5) Electrical reaction (*e. g.*, No. I), absence of reaction of degeneration, but lessened quantitative irritability to both galvanism, and faradism, called myotonic by Collier and Wilson.



(6) Mentality, only one case was mentally defective. (*Vide* Faber 22.2 per cent).

(7) Abnormal mobility of joints was present, and is a constant finding.

(8) Contractures,—peculiar attitude of toes in Case I, and middle fingers in Cases II and III, probably partial contractures of flexor tendons of those digits; are reported in 81.8 per cent of all cases.

(9) Pad feet in all author's cases are considered by Collier and Wilson as typical.

(10) Convulsions are not common, being mentioned as occurring only 4 times in reported cases.

(11) Case I showed cryptorchidism, reported only once before.

(12) X-ray of long bones shows thinning of medullary substance, density of cortex, atrophic from disuse.

**PATHOLOGY.**—Faber from autopsy finds failure of peripheral motor neuron in its entirety to develop; primary lesion is a "congenital hypoplasia of lower motor neuron due to defective germ plasm of reproductively exhausted parents." Posterior roots and horn have never been involved; exceptionally have there been reports of lesions of brain, cerebellum, or medulla.

**PROGNOSIS.**—No recoveries have been reported. Only one patient lived to be 50 years of age; next oldest was 12 years of age; 90 per cent die of pneumonia.

**TREATMENT.**—Being due to developmental defect, treatment is of no avail; drugs, mechanotherapy, and organotherapy have been tried.

SECTION ON  
ROENTGENOLOGY AND ELECTRO-  
THERAPEUTICS

SIMON, S.: **The Effect of Artificial Pneumothorax on the Collateral Lung.** *American Review of Tuberculosis*, October, 1921, v, No. 8, p. 620.

Summarizing 7 cases brings out important points:

(1) That the pulmonary roentgenographic findings in the collateral lung after artificial pneumothorax in cases of pulmonary tuberculosis may be definitely increased in so short a time (within nine days, after this treatment) that they would not appear to be due to actual pathological changes.

(2) That these increased roentgenographic findings in the collateral lung, occurring shortly after the initiation of artificial pneumothorax, are probably due to the intensification of the already existing pathological changes.

(3) That the preliminary roentgenographic changes seen in the collateral lung are in some way dependent upon the pressure from the treated side exerted against the mediastinum.

(4) That bilateral tuberculous involvement alone does not necessarily contraindicate the use of artificial pneumothorax.

C. A. SCHMID.

GUZMAN, Z.: **Radiumtherapy. Contribution on the Technic of Application in the Rectum.** *La Semana Medica*, February 3, 1921, xxviii, 137.

The application of radium in situ results often in a problem difficult to solve, especially in cases of lesions in the rectum and adjacent organs. In the neoplasm of the rectum when its space and unfolding are such that it leaves a light or a central canal, the treatment



with radium, although difficult, is easier than in those cases in which radium has to be applied to only one wall.

The apparatus for fixing the radium upon a certain spot for a determined time will be described for facilitating the technic of the application of radium.

There are three principal pieces:

(1) The first is a slender rod of copper, cylindrical in shape with a spiral screw-pin on one end and a loop of the same metal on the other.

(2) The second is more complex—it consists of a small speculum at the terminal end of which is fixed a piece of metal of an olive shape, the sides of which are rounded, having a central orifice, the continuation of the central canal of the speculum designed for the passing of the rod through it. The bell part of this speculum has soldered to its edge, about 3 mm. away, a metal arc with 5 or 6 metallic divisions (these spaces are used for fastening the ribbons which help in fixing the apparatus). The other essential part is the rod holder which is soldered to the internal face of the bell part and which on its other end has a screw with which to fix the rod.

(3) The third is a tube opened on one end with screw threads in the interior to which is adjusted the screw pin of the rod within this tube, whose thickness varies according to necessity. In this is put the radium. The form of this tube varies according to necessity also, since at times it is convenient to use protected tubes which have considerable thickness on only one side.

To fit up this apparatus it is necessary to pass the rod through the speculum and screw on the tube with radium. Then two or three ribbons of sufficient length are tied in the external hoops. With this apparatus there can be used plaques which also screw to the rod in place of the tube. If the plaque has to be used against a wall, it is necessary to use a rod having the extremity with the screw bent at a right angle.

When one thinks of applications with radium in patients who eliminate fecal material through a preternatural anus, no preparation is necessary. On the other hand, the intestine of the patient must be cleansed the day before by means of purgatives and enemas.

When the patient is prepared and in gynecological position and the instrument is sterilized, the process is as follows: The index finger of one hand with vaseline upon it is introduced into the anus,

to serve as a guide, while with the other hand is introduced gently the rod to the place where the radium which is in the end of this rod should remain fixed. At this moment, a helper runs the speculum above the rod and introduces it into the anus, so that only the bell part remains, and at this moment, at the same time that the helper fixes the rod carrying radium by means of the screw hold, the operator has been bringing out his guiding finger, moving the rod to its point of fixation in the other hand. Immediately the ribbons of the bell part are tied to a circular bandage which ought to have been placed on the patient beforehand, completing the immobility of the apparatus, bending the rod to the convenient side and covering, at last, everything with a covering of cotton, held in place by a T-bandage.

The rod being of copper is rigid but at the same time it can be bent easily and remain in a bent position. This flexibility is one of the advantages which this instrument possesses since it permits it to give to the rod carrying radium the direction which it needs in finding the place of lesion.

This instrument has been used with satisfactory results in cancer of the rectum, neoplasm of the bladder, and irradiation of the prostate to one side of the rectum, especially the left lobe.

HAUPT, A., AND PINOFF: **Focal Distance in Deep Roentgen Therapy** (Zur Fernfeldwirkung in der Roentgentiefentherapie). *Deutsche medizinische Wochenschrift*, April 14, 1921, xlvii, 415.

In the investigation of the nature of "distant field effect", discrepancies have arisen in the experimental work, contradictions have been found between the applied methods of measuring and the physical laws. The results of measurement showed a higher energy in the "distant field" in the depths of the tissue, instead of a diminution. Time could not be valued on a mathematical basis. Furthermore, the large tube caused an increase of energy. The physical laws in these methods of measurement, however, remain the same. The actual conditions in the "distant field" energy are the following: Loss of energy in the depths of the tissues (proportional to the physical laws); adjustment of this loss by appropriate lengthening of the exposure to the rays. Practically, however, there is a gain of time of 18 per



cent, using a focus of 50 cm.; beyond 100 cm. (39 ins.) focus, however, time is increased more than mathematically. The author is of the opinion that these digressions cannot be explained physically. Here physical and physiological problems meet.

In a negative sense, absorption decreases roentgen energy in the depths by using part of the hard rays in the most superficial tissues. The greater the loss by absorption, the greater the increase of hard rays in the depth. Therefore, a mixture of rays, containing an excess of hard rays, is advisable.

*Instruments.*—Loss of energy by absorption at the depth of 10 cm. (4 ins.) amounts to 25 per cent. Dispersion equals the square diminution of rays; it is very great at a depth of 10 cm., amounting to 51.5 per cent. Dispersion is a law, and as such, unavoidable. At a depth of 10 cm., absorption and dispersion together amount to a loss of energy of 75 per cent.

In a positive sense, time alone is physically unlimited. Dispersion of rays is a theory, the energy of this dispersion practically cannot be measured. The dispersion rays are said to be added to the primary rays and to increase the energy of the rays to 100 per cent. The larger tube, physically, cannot improve deep radiation, and the tube has no influence on the mathematical extent of time. The only factor in improving the deep radiation doses, is the extent of time. These are the limitations of our present day apparatus.

We know that rational, deep roentgen therapy was possible only on a biological basis. (Skin dose—ovary dose.) The standards could be arrived at only by human experimentation. The organism has its own laws and physical laws are only relatively applicable. The digressions from these laws are really not surprising. At a distance of 50 cm. (mid-way between 80 and 20 cm.) extended exposure was necessary. The time is, however, shorter than it would be mathematically.

If there is no possibility on individual oscillations and the results are generally uniform, then these digressions would be only of a nature which would bring about the effects a little sooner or later. Probably the effect would be retarded because the energies are markedly diminished in the "distant field". It would be a little earlier, ahead of the mathematical time, because the living cell will succumb to the insult of the roentgen energy, which is diminished but pro-

tracted and constant. Higher energy will produce more violent defensive reaction.

Apparently there is a paradox between the facts that long-acting, though weaker agents, are more dangerous for the cells than those which act but a short time. There is a chance of an intermediate restitution.

There is a biological boundary beyond 80 cm. where the energy, which has so far been adequate, is very markedly diminished in the depths. In this case, even a greater length of exposure will not be sufficient at a focus of 50 to 80 cm. The square ion measurements, in the application of the large tube for deep roentgenization, is also of a physiological nature. The large tube is identical to the large ray bundle. Therefore, not only the focus of disease, but also its surroundings, come under its influence. The focus is more certainly and more easily destroyed. There may, possibly, exist a connection between the time-saving in the "distant field" up to 50 cm. and beyond.

However, the value of the large tube is purely technical. Without it, extensive carcimonata could be effectively combated.

*Conclusions.*—Increased focus and large tubes do not increase the deep doses.

MANOUKHIN, I. I.: **The Treatment of Infectious Diseases by Leukocytolysis, Produced by Roentgenization of the Spleen.** *The Lancet*, April 2, 1921, xiv, 685.

The human spleen is radiated by a dose of x-rays equal to 1 h., as measured by the Sabouraud and Noire radiometer, using the Holtzknecht scale; to weak patients a smaller dose is given; rays are filtered through 1 mm. of a aluminium during five minutes at one milliamper and 5 to 6 a. with x-rays whose hardness is 8 on Benoist's radiochromometer and 10 on Wehnelt's criptometer, with anticathode 25 cm. (10 ins.) from the body. As liver and spleen secrete antagonistic ferments, do not allow roentgen rays to fall on the liver while radiating the spleen. The spleen is done from the front or back but never from the side; to avoid radiating the liver, and the spleen in radiating from the front, the right boundary of the tube must be to the left of the left mammary line, when from the back to the left of the left scapular line.



The author combats bacteriemia of the blood by increasing the effect in introducing various anti-substances in this way,—feeding the patients with an autoserum obtained from their blood 8 to 10 minutes after roentgenization of the spleen. This autoserum was administered in gelatin capsules.

He used this method in pulmonary tuberculosis, typhoid fever, tetanus, acute bronchitis, pneumonia, pleurisy, various forms of typhus, acute arthritic rheumatism and acute malaria; also in bronchial asthma, hepatitis and cholangitis, and hemophilia.

"It is in this way that the organism can avail itself most extensively of the substances present in the leukocytes, for not only do we vigorously destroy the latter, but we also, through this destruction, stimulate the blood-forming organs to an increased production of new leukocytes which will go on breaking up in the blood, saturating the blood-plasm with specific anti-substances which are necessary for the struggle with bacteria and their poisons.

"Even from this very concise exposition of the large supply of material at my disposal I think one may convince oneself that, in leukocytolysis, produced by radiating the spleen with a stimulating dose of roentgen rays, we have acquired a sure method of governing the blood reaction of the organism. We can, therefore, at any moment give radical help to man struggling with various infections."

PFÄHLER, G. E.: **Clinical Results from the Newer Technic of Deep Roentgentherapy in Malignant Diseases.** *American Journal of Roentgenology*, May, 1921, viii, 236.

The information has been brought to this country that in Germany a greater amount of filtration was being used in the treatment of deep seated malignant disease, with the source of rays at a greater distance from the skin and with the use of a higher voltage. It has been the impression of the men visiting the German clinics that more satisfactory results were obtained from their technic than from the lighter technic used in this country. The author has modified his technic until now he is giving 5 milliamperes at a focal skin distance of 30 cm. (12 ins.) for a period of forty to fifty minutes. Forty minutes will rarely give an erythema; fifty minutes will generally give an erythema. Precautions must be taken to in-

sure the presence of the proper number of filters, because with deficient filtration this prolonged treatment will produce an incurable burn. The author has two people make observations on the filters for every dose given. In Germany, they are using from 5 to 1 millimeter of copper as a filter. From experiment the author has learned that .5 mm. copper is equal to 13 mm. aluminin measured photographically. With the above technic it is evidently undesirable from every standpoint to limit the field of radiation to small areas. The smaller the field of radiation, the smaller the amount of secondary radiation; and secondary radiation probably does as much as the primary radiation towards destroying malignant disease, and in fact may be the sole cause of destruction of the malignant cells; therefore the relative value of small areas and much cross-firing decreases. It is always desirable to cross-fire as much as possible providing we are actually cross-firing, but mere division of the surface of the body into small areas does not actually increase the cross-fire value. It is the author's present practice to treat the local disease directly by radium and then to cross-fire through an area extending from the symphysis pubis to the umbilicus and to the anterior spines on each side, and either use this as one area for treatment or divide it into two. Then a similar dose is given through each lateral surface of the pelvis and one or two similar areas posteriorly. This treatment has given the author some brilliant results. Unless a pronounced primary effect is obtained and the disease made to disappear within a few months, it often develops a resistance which is as great as that of the surrounding tissues. It is desirable, therefore, in all instances to get as much treatment into the malignant disease within the first month or two as can be borne by the healthy tissues, and in this way the malignant disease is destroyed while it is yet more sensitive to radiation than the healthy tissue. The author found that as the length of exposure was increased, radiation sickness was increased in frequency and degree. An increase of the interval between treatments or doses given is the best safeguard. The same results, however, cannot be obtained with too much division of the dosage; and if the deeper technic is used and at the same time fractional doses, the expense will be correspondingly increased, and unless carefully managed the cancer cells may mature and develop a greater resistance to the rays. Greater precautions are necessary to guard against leaking tube shields or any other form of stray radiations.



STEVENS, R. H.: Some Points in Radiotherapy in Deep-seated Cancer. *Journal of Radiology*, June, 1921, ii, 21.

During the past five or six years, radiotherapy has compelled respectful recognition from the surgeon. Previously the radiotherapist for the surgeon, existed only as a specialist of convenience on whom the hopeless cancer case might be shifted. Now they are working together.

The manufacturers in the past have devoted their efforts to the aid of the diagnostician, the therapists having not been numerous. So the therapist was obliged to construct his own apparatus. The Coolidge tube has been the greatest contribution to the development of deep x-ray therapy. Most of the Germans are still working with gas tubes, and yet are making wonderful progress. The Coolidge tube is elastic and controllable. It must be built, however, for higher voltage than the present tubes carry, if progress is to be made with them. "For there is much evidence that some malignancies may only succumb to large quantities of rays of shorter wave length than any we are yet familiar with in this country". It does not do to assert sweepingly that the cancer cell is affected by x-ray. One must define the type and stage of development of the cancer cell under discussion, and its sensitiveness to a definite type of rays, of a certain wave length. If the Coolidge tube will be built to safely carry twice the voltage it does now, transformers must be built to produce this voltage.

During the last three or four years the overhead system has been greatly improved. The prevention of corona along the main wires overhead, does away with much of the unpleasant gas, but the trolley reels with small wires and ordinary old-time connections to the tube make a lot of gas, which no doubt helps to make the patient sick. Ball connections to the tubes might be devised instead of corona. "The wires leading to the tube should be effectually insulated by hard rubber or micanite for a distance of about 18 inches, so that the patients could not easily come in contact with the high tension current. The tube-stand and holder should be built of wood, the shield of nonconducting x-ray proof material. Heavy lead glass would answer fairly well. The glass may, however, crack in long-continued treatment. If glass is used it should be deep dark red, green or black. The author uses aluminum and glass filters, and leather fil-

ters. For an automatic switch a magnet and armature in circuit with a good wall clock, is used by the author. Its front is a dial divided into quarter minutes, up to 60 minutes. The clock interrupts the current in the magnet every 15 seconds.

The armature is connected with a wheel with 240 teeth, one for each quarter minute in sixty, also connected with the hand on the dial. An ordinary door-bell ringing coil under the switch-board is electrically connected by means of an alternating current from the machine, with a stop at 0 on the dial. At 0 the hand releases a spring, which opens the x-ray switch.

Prof. Koenig of Freiburg uses half a millimeter of copper and a current backing up a spark of 40 cm. to 50 cm.

Friedrich and Wintz say that this characteristic homogeneous radiation was increased by the scattered rays going in the same direction, and this action was increased the wider the post of entry. Their iontogarantiometer, an ionizing chamber, accurately measures the amount of the dosage at any depth. "Startlingly enormous doses thus measured are given through one or two ports until the tumor has received a lethal dose, which latter is carefully determined for different types of growth".

The Hamburg School, headed by Albers Schoenberg opposes these radical methods, and uses milder therapy, somewhat as it is used in this country.

Colwell and Puss have demonstrated that every cell has its own "selective absorption".

STEPHAN, S.: **Radiotherapy of Peritoneal and Genital Tuberculosis** (Indikationsstellung zur Roentgenbehandlung der Peritoneal und Genitaltuberkulose): *Monatschrift fur Geburtschuelfe und Gynaekologie*, May, 1921, liv, 314.

The author considers roentgen treatment of peritoneal and genitive tuberculosis as very good help. He does not think that operation can altogether be discarded. Where severe adhesions exist between the intestines and the genital organs, radical operation cannot always be done. The indication for x-ray treatment is found in the typical adhesive peritoneal tuberculosis, which manifests itself by conglomerate tumors of the intestines without ascites. Furthermore,



x-ray treatment is used where the permission of operation cannot be obtained, or where general cachexia, or other primary foci, seem to forbid operative treatment. Tentative laparotomy, quickly followed by roentgen treatment, is used in the ascitic-miliary type of tubercular peritonitis. This procedure is made to give the possibility of a microscopical diagnosis and in order to evacuate profuse ascites, for this fluid will have an influence on the action of the rays, on the deep serosa. Where there is only a tuberculosis of the serosa, x-ray is used after the tentative laparotomy on the entire abdomen and the back, excluding the lesser pelvis. The pelvic organs are, nevertheless, touched by non-castrating rays. The action of the rays causes hyperemia and round cell infiltration in the tubercular peritoneum and in the entire serous cavity. This is the case even where the rays are primarily acting on all surfaces. In younger patients the author always tries to save the ovaries. One ovary can usually be saved as the adnexa of one side usually are not involved. Prof. Hoehne of Greifswald (Sitzung der medizinischen Gesellschaft zu Greifswald, July 4, 1919) says that even in pure genital tuberculosis, as well as in combination of adhesive pelvi-peritonitis and a genital tuberculosis, laparotomy is performed.

In irradiation of the pelvic organs, one of the ovaries is covered. In most of these cases, menstruation was as profuse after this treatment as it was before. In cases of genital tuberculosis where extensive degenerative foci are found in the lesser pelvis, the ulcers are excised and drained from the vagina; then x-ray treatment is used. In these cases it is impossible to save the ovaries. This is, however, not necessary as the destruction of the follicular tissues has ceased on supervision of tubercular destruction.

The author reports a case of Hoehne of a girl 22 years old. She suffered from severe menorrhagia. After treatment with sistomensin and mannin had failed, the flora of the cervix was examined. It was found to be perfectly harmless. The cervix was then abraided and the microscopical examination showed tuberculosis of the endometrium and typical tubercles and giant cells. Roentgen treatment caused the temperature to decrease immediately. The general condition improved and after three days the patient could leave her bed.

SECTION ON  
NEUROLOGY AND PSYCHIATRY

NEUSTAEDTER, LARKIN J. H., AND BANZHAF, E. J.: A Contribution to the Study of Lethargic Encephalitis in Its Relation to Poliomyelitis. *The American Journal of Medical Sciences*, November, 1921, clxii, No. 5, No. 596, p. 715.

From Flexner's experiments it is known that normal human serum does not neutralize the virus of poliomyelitis, but that serum recovered from patients who have recovered from poliomyelitis does neutralize the virus. The authors experimented with five monkeys which were completely protected from poliomyelitis by sera of patients convalescent from four undoubted cases of lethargic encephalitis and one suspected case. Their results compare favorably with the results of other investigators in the neutralization experiments of poliomyelitis virus and convalescent human poliomyelitis sera.

A. T. MAYS.

WOLTMAN, H. W.: Spina Bifida. A Review of 187 Cases of Myelodysplasia without Demonstrable Bony Defect. *Minnesota Medicine*, 1921, iv, 244.

In the occult variety, the onset of symptoms may be delayed until the declining years of life.

Spina bifida is one of the most common deformities, making up one-sixth of all monstrosities (Chaussier); it occurs once in from one to two thousand births. Tulpins, in 1641, named the condition spina bifida; the Greek designation rachischisis, is customarily reserved for the most marked type of the defect, in which the entire



medullary canal fails to close. The defect may appear as a spina bifida cystica or as a spina bifida occulta; the majority are a cystic type. Subdivision of the cystic type depends upon whether the walls of the tumor include only the membranes of the cord, that is, a meningocele, or whether they include both the membranes and the cord, a meningomyelocele; the central canal of the cord may be dilated, when the growth is termed a syringomyelocele, or the cord may be turned completely inside out when the sensory roots come to lie laterad and ventrad to the motor roots.

A very important condition allied to spina bifida, although it represents only a fraction of such cases, is an analogous developmental defect of the spinal cord, that is myelodysplasia without demonstrable bony defect. Spina bifida is usually posterior, but may be lateral; it occurs anteriorly (Budde), although very rarely, and then it has an altogether different embryological significance.

Spina bifida, in its etiology, is still unknown. The embryo closure of the neural canal is completed by the beginning of the third week, the upper and the lower ends, where the spina bifida usually occurs being the last to close. Whatever the cause of the defect may be, it seems to have been active prior to this. The theories of adhesions either amniotic, resulting from amniotities with hydramnios, or lack of separation of the skin from the medullary plate (Cruveilhier Ranke) have largely been displaced. The assumption of abnormal bending in fetal life (Chaussier) hardly brings the solution nearer.

One of the oldest theories, strongly championed by Morgagni in 1779, rejected by most writers since von Recklinghausen's comprehensive dissertation on spina bifida, in 1886, and recently rediscovered and espoused by numerous writers, is the theory of hydromyelia. According to this theory the choroid plexus, activated, perhaps by a hormone, secretes such a large quantity of spinal fluid that it either prevents union of the medullary folds or ruptures them after union has taken place. Interference with the absorption of spinal fluid is advanced as the alternative mechanism. The rapid accumulation of fluid then is given as the primary cause, the resulting cyst is interposed as a bulging mass between the lateral mesodermal structures, preventing the approximation and fusion of the lips of the medullary groove. One of the main supports of this theory lies in the fact that spina bifida is often associated with hydrocephalus, which is rapidly

made worse or, if not already present, may rapidly be produced by operative closure of the spinal defect. The assumption of an excessive amount of spinal fluid obviously depends upon the further assumption that the choroid plexus is secreting fluid at this early embryonic period. This hypothesis seems inadequate when the whole problem is considered; one of its most serious objections is the fact that the choroid plexus does not begin secreting fluid until about the tenth week, whereas all writers agree that the spina bifidous deformity is produced no later than the third week. Further, the cases in which there is a failure of the entire neural canal to close certainly represents a more serious type of the same fundamental defect and must accordingly be explained on the same basis; it seems highly improbable that the amount of spinal fluid secreted is so immense that the entire canal, from its cephalic to its caudal ends would be torn open or union prevented throughout by the flow of the choroidal secretion. Complete absence of the cord, or amyelia, which accompanies many of these severe types (Schmaus and Sacki) must also be explained by a more comprehensive theory. Mention of micro-myelia, diastomyelia, and diplomyelia, which occur with spina bifida and without it, would still further embarrass the theory. The portion of the spinal cord involved lacks all evidence of pressure myelitis, with its disintegrating nervous tissue, is not a correct observation; on the contrary, it has remained at a standstill in its embryonic development, with embryonic nerve-cells and embryonic blood-vessels, as the area medullovasculosa (v. Recklinghausen). Harelip, cleft-palate and club-feet, are associated with it. "While it must be admitted that the added area of absorption supplied by the cyst often prevents the occurrence of hydrocephalus, it would seem more reasonable to suppose that the faulty absorption of spinal fluid may be based on some developmental defect. An associated cardiovascular defect has been suggested as a possibility".

Von Recklinghausen considered spina bifida as primarily due to a failure of the mesodermal envelope of bone and dura to approximate; he looked on the ectodermal dysautogenesis as secondary. Myelodysplasia may occur without defects in the bone, however. This suggests that the defect may be primary in the medullary plate.

Spina bifida cystica and occulta may not be accompanied by defects of the nervous system.

In one case spina bifida was closely related to enuresis and sacral



dimple, and was transmitted to six persons on the male side, through three generations. This is a clear evidence of heredity.

Chemical experiments have resulted in the production of spina bifida (Hertwig). Conklin, by turning frog's eggs, produced double-headed monsters.

Bardeen produced abnormalities, including spina bifida, by exposing frogs to x-ray before fertilization.

The occurrence of spina bifida occulta is estimated at 24.6 per cent. This figure is probably too low, as many persons unwittingly carry about this defect. Reflex disturbances, such as absent tendo-achilles reflexes, faulty contour or slight asymmetry in the development of the calves or buttocks, pes cavus and hammer-toe are related to spina bifida. Hypertrichiasis, on the whole, is not common. According to Tellmann, 38 of 42 cases (90 per cent) of hypertrichosis partialis were associated with spina bifida. In about 8 per cent the tumor is located in the cervical region. The sacral dimple is a very common defect. Cramer found it in 40 per cent of 200 infants. It usually disappeared by the age of twelve. When persistent, it signifies a developmental sacral defect. Deformity of the feet, usually club-foot, is one of the most common deformities and may be the result of muscular paralysis. This, however, by no means explains all cases of club-foot.

Little cites a case of club-foot on the male side for four generations. The theory of the fetus prolonged retention in a deformed position in the uterus seems well disproved by the occurrence of club-foot in extra-uterine gestations. Peltesso is of the opinion that the majority of cases of club-foot is associated with spina bifida.

Sphincter disturbances are the most common in 71 per cent. Motor paralysis in 53 per cent was next in frequency. Sensory disturbances were present in 45 per cent. Incontinence is common. The association of enuresis and spina bifida was found in one case of the author's series, but found several times in the family histories.

**KESCHNER, M.:** *Abnormal Mental States Encountered in a Detention Prison.* *Archives of Neurology and Psychiatry*, April, 1921, v, 382.

The author has been a medical officer for the last fourteen years in the Brooklyn City Prison. There is a transient population of

from 15,000 to 20,000 a year. The ages of the inmates vary from 16 to 85 years, the most being between 20 and 30. The cases include every crime against the State, nature, person, and property.

According to Lombroso, and his followers, an anthropologic examination, alone, could, in most cases, be sufficient to detect a criminal and to determine the particular crime, which such an individual is most likely to commit. It is true that physical examination of the inmates show degeneration, such as sharply pointed skulls, flaring forehead, low and narrow foreheads, deformed ears, prognathism, notched and widely separated teeth, high arched palates, hare-lips, saddle-shaped noses, spinal deformities, clubbed feet, nystagmus, albinism, stammering, polydactylism, syndactylism, and hypothyroidism.

Dr. C. P. Goring, physician to the Pankhurst Prison in England, studied 4,000 male convicts. He concludes that there is no physical criminal type. Some early criminologists assert that all criminals are insane, and Lombroso says "criminality is insanity". Modern penologists oppose this view.

Thos. Mott Osborne says that most convicts are not usually stupid or mentally retarded, but possess a keenness of wit. One-sided development is often plainly noticeable. He calls the assertion of most convicts being mentally deficient, sheer nonsense.

The Medical Inspector's report in the British Blue Book, 1904-1905, gives the rate three times greater than among the general population of the same ages. There are many lunatics wandering about the country who will not be diagnosed before they commit some crime. Glueck says that mental disturbances in a prison exist in a ratio of about 10 to 1, as compared with the free population. Spaulding and Healy, among 1,000 criminals, found 65 per cent without mental defects or aberrations.

Osborne says, "Prison is as full of diverse personalities as the outside world. It is populated, by the weak, the gay, the talented, and the ignorant. Many prisoners have unusual personalities." The speculation of the percentage of abnormal prisoners, is purely speculative.

Keschner classifies the prisoners as accidental, occasional, insane, and habitual. The accidental criminal usually shows no defect of intellect or character, except that he is emotionally somewhat unstable. He is often overawed by the impending danger and over-



come by the humiliation attending the arrest. Clouding of consciousness is often seen during the detention. The occasional criminals show no gross defect of intellect, but usually lack will-power, and the power of discrimination. They are very suggestible and yield easily to temptation. Long sentences develop the criminal instinct in them and make habitual criminals. They rarely commit crimes requiring violence. They are petty larceny thieves, sneak thieves, pick-pockets, and forgers. Many have dementia precox. They differ from the psychopathic type in that they have no defect of intellect. The insane criminal constitutes a small fraction of the prison population, that is there are few persons, who commit crime as a result of psychosis. There are two groups—the committable and non-committable. Among the committable are deteriorated paranoiacs who commit murder or arson. They justify their deeds on the grounds of their delusions. The manic-depressives commit murder, assault, or arson, during an episode of excitement, or while depressed they commit murder or attempt suicide, or both. Abnormal mental states, due to acute toxic or infectious conditions, are rarely seen in detention prisons. The most difficult problems in forensic psychiatry are presented by the periodic insane, and the epileptic, who commit anti-social acts during an episode of insanity or during a preparoxysmal or postparoxysmal state.

Among the non-committable cases are paranoid states, without deterioration, the querulous and the militant women. Without friends, and with the possibility of discussing their situation in the prison, they become depressed, have delusions, and auditory and visual hallucinations. Some prisoners develop religious delusions, some sexual. The accused believes himself to be a great composer, painter, etc. He sees enemies everywhere. Another is a prophet. Some are hypochondriacs. Apparently there is no defect in intellect, although these patients lack insight. They are usually arrested for disorderly conduct, malicious mischief, and assault.

Acute prison neurosis of the anxiety type is very frequent among sentenced prisoners. This has been described by Yawger.

The habitual criminals are either instinctively professional or feeble-minded. The feeble-minded really belong to the psychopathic group. Southard puts them among the hypophrenics, the epileptics, the schizophrenics, the psychopathic monomaniacs, etc. These people come into contact with the prison on account of defect of in-

telleet, as well as of character. It is the most heterogeneous group in our classification. These are the indolent, the depressed, the maniacal, the impulsive, the imperative, the pathologic liar, the epileptic, the perverts, the prostitute, the kleptomaniac, the alcoholic, the drug addict, and the hysteric.

LICHTENSTEIN, P. M.: **The Criminal.** *Medical Record*, March 12, 1921, xcix, No. 11, p. 428.

Criminals compose the following classes: Drug addicts, 20 per cent; mental defectives, 20 per cent; insane, 1 to 2 per cent; remaining 58 or 59 per cent are composed of prisoners whose records and tendencies point to poor environment, opportunity, and temptation, and finally heredity.

The drug addict, if poor, commits crimes to get money to buy the drug; physicians are less to blame now, since large amounts of drugs are being smuggled into the country and peddled at enormous profits. A new law is needed, as Federal and State laws now conflict.

Mental defectives are potential criminals; easily led and susceptible to suggestion, they assimilate all that is bad and reject all that is good, thinking after they act instead of normally before they act, being used by the criminal elements, who make them their tools in crime. This class is difficult of control except after crime is committed; then measures should be taken to prevent them from again committing crimes. The idiot should be kept in an institution as long as he lives, especially if criminal, being less responsible than the criminal insane; the imbecile should be improved by surgical treatment or educational methods, if possible, failing which he be kept in an institution, or if released he should be watched; the moron, when arrested, should be placed not in an insane asylum but in an intermediate institution similar to Letchworth Village or that at Rome, N. Y. Prison for him is a school for crime. Teach him to correct his habits and let him work at a trade. By education and training he will make a useful citizen. In this way there is great hope of eliminating the defective as a criminal.

The really insane should be treated and not be allowed to commit crime; especially is this true of these diagnosed as manic-depressive, precoc, or paranoiac, who have "cleared up" somewhat and al-



lowed to go at large. He soon commits a crime. It is an injustice to the public to allow a paranoiac his freedom, especially if suffering from delusions of persecution: he as well as the manic-depressive, precox, alcoholic psychotics, and other insane should be placed on parole for many years after leaving the asylum, reporting to a psychiatric clinic at stated periods. In 90 per cent of all cases of manic-depressive and precox cases there is a remission. A person who is suffering from paranoia or from a paranoid trend should never be released, being a dangerous individual.

Our definition of legal insanity is faulty. A person knowing the nature and quality of an act and the difference between right and wrong should be considered legally sane.

We should include moral defectives among the mental defectives, and we must include all sexual perverts as such people are potential criminals.

People suffering from organic insanity should be incarcerated for life as they will never recover.

Finally, environment, through improper home training, corner loafing, social clubs, pool rooms, cabarets, venereal disease, and need of money to pay his debts, form the steps and foundation of crime. Who is to blame? First, parents are too lax, then society should see that more attention is paid to the development of the moral sense in the child at school, discourage attendance on cabarets and "playing the races"; also all suggestive scenes should be censored out of the moving pictures, also all wild west pictures. The soldier discharged as physically unfit has not been properly cared for, especially those shell-shocked and weak-minded.

Heredity plays its part in the commission of crime, especially where the parents were addicted to liquor, and were often in jail. Eliminate the cause and crime can be reduced to a minimum.

MORRIS, S. J.: *The Relation of the Persistent Thymus Gland to Criminology*. *Medical Record*, March 12, 1921, xcix, No. 11, p. 438.

There are three types of disturbances of the mind: first, deficient number of cells in the development of a whole or part of the brain; second, those in which the brain substance has received an

injury; third, there is a normal number of cells, but there is a change in tissues from which these cells get potential energy and nutrition.

The functional activity of the cell is defined thus: a cell responding to an outside stimulus in the performing of an act; the point at which this outside stimulus causes the potential energy in the cell to be changed into kinetic energy, thence causing an outgoing impulse, is termed the threshold of functional activity. When the chemical composition of the surrounding tissues is normal, the threshold is normal; if altered, threshold may be raised or lowered,—normal threshold is more or less at a constant level. When raised it requires greater stimulus to cause cells to react; when lowered, cells respond to impulses which ordinarily produce no impression.

Inhibitory impulses, coming from the intellectual side of the brain, keep the emotions (love, hate, and fear) within the realm of sanity. Therefore, if the threshold is normal, there results an emotion which is rational; but if chemical change disturbs the threshold of cell groups in the emotional part of the brain, it will be impossible for this inhibitory action of the intellectual side of the brain to influence the emotion, resulting in an action purely impulsive, lacking judgment of right and wrong, or thought of consequences.

The ductless glands are the chief factors in disturbances of the threshold; thyroid disturbance causes explosive reactions from incoming impulses, which ordinarily would not produce an action. Conversely, deficient thyroid substance causes lack of response to an incoming impulse, which would normally cause a response.

In cases of persistent thymus found in 192 bodies at autopsy, coming from 'insane hospitals, poorhouses, penitentiaries, etc., 20 out of the total 22 were taken from the bodies of criminals from the State penitentiary. All of these were first or second degree murderers, except one, who was a rapist. Seventeen were first degree murderers, which were hanged, and 3 died following illness. Of the other 2, one came from the insane hospital, and the other from the poorhouse: the latter was 22 years old with a thymus gland that weighed 5 grams (77.16 grains).

These glands weighed from 5 grams to 29 grams; the ages were from twenty-two to fifty-six, all were males. The largest gland measured  $5\frac{1}{2}$  inches long, 1 inch wide, and 1 inch thick; the smallest was 2 inches long, 1 inch wide, and  $\frac{1}{2}$  inch thick. Histologically, normal thymic structure.



HUNT, J. R.: The Striatal and Thalamic Types of Encephalitis: A Consideration of the Symptoms and Syndromes Referable to the Basal Ganglia in Epidemic Encephalitis. *American Journal of Medical Sciences*, October, 1921, clxii, No. 4, No. 595, p. 481.

The author's series consisted of 25 cases. There were three clinical types or syndromes involving the corpus striatum.

(1) A paleostriatal or pallidal syndrome—paralysis agitans type. There were 18 cases of this type. It originates in the motor cells of the corpus striatum and links this structure with important nuclei of the hypothalamic region, controlling the extrapyramidal tracts. It may be general, hemilateral, or segmental.

(2) A neostriatal syndrome,—the choreiform type. There were 4 cases. It may be general, hemilateral, or local in distribution.

(3) A mixed striatal syndrome,—the combined paralysis agitans-choreiform type. Three cases. This type displays the symptoms of both the above types. Thalamic symptoms consist of severe and persistent pain and disturbance of superficial sensibility of pain and temperature sense.

A. T. MAYS.

COVEY, G. W.: Four Cases of Pituitary Disease. *Nebraska State Medical Journal*, April, 1921, vi, 97.

*Embryology.*—The pituitary is divided into the anterior and posterior parts; anterior arises from buccal epithelium as a diverticulum; posterior from neural epithelium. They lie in the sella turcica.

*Histology.*—The anterior is a gland of secretion, made up of large sinusoidal blood spaces separated by cords of cells. Posterior part is composed of strands of neuroglia tissue, arising in pars intermedia and migrates toward infundibulum, where it is thought to enter the third ventricle.

*Physiology.*—Testing by injection into circulation, Howell cites: slowing of heart rate, rise in blood-pressure, stimulation of all involuntary muscles by direct effect on fibers, stimulation of certain glandular structures, acceleration of formation of cerebrospinal fluid, influence on general metabolism, probably by accelerating the process

of glycogenolysis of the liver. Removal of posterior lobe causes increased carbohydrate tolerance, increased fat formation, arrested development or retroversion of sexual glands. Removal of anterior lobe causes fall of temperature, unsteady gait, loss of flesh, diarrhea and death.

Cushing divides cases into three natural groups:

- (1) Hyperpituitarism predominating.
  - (a) Giantism, if process antedates ossification.
  - (b) Acromegaly of late occurrence (typus Marie).
- (2) Hypopituitarism.
  - (a) Adiposity, with persistence of both skeletal and sexual infantilism when process originates in childhood (typus Fröhlich).
  - (b) Adiposity with sexual infantilism of reversive type, if it originates late.
- (3) Mixed forms, or dyspituitarism.

He cites 4 cases:

*Case I.*—Man, 50, complained of partial blindness, with increased size of face bones; examination showed contracted temporal part visual fields. X-ray showed enlarged sella turcica; urine normal. Diagnosis, acromegaly with pituitary tumor. Operation advised but refused.

*Case II.*—Female, 18; amenorrhea, recent development; coincidentally gained 29 pounds; urine normal; otherwise patient was negative. Patient put on lessened diet and given posterior lobe extract by mouth; later changed to pituitrin subcutaneously which caused her to gradually lose weight, and menstruate twice at regular intervals. Case was lost sight of. Diagnosis, hypopituitarism type with sexual infantilism of the reversive type. Probably show more marked symptoms later.

*Case III.*—Female, single, age 34, comes to be treated because of overweight; up to 5 years ago weighed between 135 to 150 pounds, now weighs 217. For last 20 to 25 years attacks temporal headache or headache at occiput, lasting 12 to 18 hours, occurring at intervals of 3 or 4 months, with visual diminution and brilliant spots on dark background. Nervous, irritable, doesn't want to be disturbed by anyone. Heavy eater; craves sweets. At times nycturia, 4 to 5, with increased quantity. Edema of ankles for number of years. Grandmother and aunt on paternal side overweight; otherwise family



history is negative. Menses began at 13 years; irregular; varying from 18 days to 8 weeks; lasting three days; scant. Examination showed fat distributed about hip, abdomen and thigh; mentally sluggish, halting speech; moderate edema of ankles. Otherwise personal history negative. Refraction showed, papilloedema, bilateral early stage, myopic astigmatism.

Urine was alkaline, specific gravity 1088, otherwise negative. Glucose tolerance test high. X-ray shows sella turcica to be large and deep showing enlargement of pituitary producing some pressure changes. Diagnosis, was made of hypofunctioning pituitary, with tumor of pituitary. Treatment consisted of low carbohydrate diet, moderate exercise; twelve tablets daily whole pituitary; subsequently she lost weight slowly, and menses became more normal. After a lapse, when she indulged in candy, she had return of bad headache. Edema less marked. Weight in 3 months was down to 193½ pounds. Sugar tolerance nearly normal. Physical improvement equalled by striking mental effect.

*Case IV.*—Female, 24, divorced, bookkeeper; complained of inordinate thirst for 8 to 12 weeks; coincident polyuria; loss of weight, normal 120, now 106; loss of appetite for past 2 weeks; for 3 days steady dull pain in right lower quadrant of abdomen. Family history of no special interest. Personal history, menses regular and normal. Physical examination showed her to be slightly undernourished and nervous, with parched mucosa of mouth, tenderness over appendix; otherwise normal.

Laboratory urine, total in 24 hours 9 liters (19 pints), specific gravity 1004, alkaline, (polyuria was limited only by intake). X-ray—small sella turcica—showed signs suggesting pituitary disease. Treatment at first 1 ampule pituitary injected every second day—later it was found adequate to give 12 to 14 tablets daily; kept output down to 5 quarts daily, appetite good. Later operated on appendix; and gain in weight and strength increased.

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## SECTION ON GENERAL MEDICINE

SAMWAYS, D. W.: **Dilatation of the Heart.** *The British Medical Journal*, February 5, 1921, 1, 188.

Mechanical disadvantages under which a dilated heart labors are not realized till the influence of size on the working conditions of the heart is more fully grasped, the factor of the size of the chamber it encloses is largely overlooked, though of immense importance to its working.

Now, if four lines be drawn from the center of two concentric spherical surfaces through both surfaces, the diameter of one sphere being double that of the other, the area enclosed between the points of passage of the first surface will obviously be but one quarter of that for the second.

If a sphere dilate, therefore, to twice its diameter or radius, it would have an internal surface area four times as large as before, and its walls, would necessarily become four times as thin. For this reason it would be four times as difficult for the heart to contract on its contained blood, there being four times the area of blood to contract on, or four times the number of units of area of blood to resist its contraction. The heart's power of exerting a pressure on its contents becomes halved when its diameter is doubled, so the working power of the heart is halved, and the heart's embarrassments are increased eightfold.

When the heart is enlarged it has more units of surface of blood, increasing more or less, as the square of the diameter to resist its pressure, and it has less power to contract.



A dilated heart may be greatly relieved by blood-letting, because it allows the distended ventricle to contract, and once contracted, the muscle wall may, at least for a while, prevent its chamber from becoming overlarge again.

The important thing is to first realize that the size of the cardiac chamber at any time determines, more than is readily imagined possible, the power of the heart to empty itself, the heart weakening, as it dilates, inversely, more or less, in proportion to the cube of the dilatation.

**DRYBROUGH-SMITH, E.: A Case of Tuberculous Salpingitis. *The Lancet*, April 23, 1921, 1, p. 854.**

This was a case of a girl, 15 years old; it started with a pain in the abdomen and vomiting. For five years the pain continued so that she could not walk or do any kind of work. She would get fits of tearing her hair and being violent. She had one brother who was mentally deficient, and there was a history of tuberculosis in her father's family. The pain was worse before menstruation, which was regular. She could not stand upright, and moved across the room with the aid of a stick. Her temperature was 99.4° F. (37.44° C.), pulse 84. Some tenderness over the appendix. Vaginal examination showed the region of the right tube to be tender. Position and size of the uterus were normal. On opening the abdomen, adhesions were seen spread over the cecum and termination of the ileum. There was no ascites. The right Fallopian tube was thickened and rough. Over its peritoneum, many small, white-grayish tubercles were spread. The appendix was abnormally thick, and felt hard. The right tube and ovary, and the appendix, were removed. The pathologist reported tuberculous lesion of the Fallopian tube and appendix.

The patient remained well for a year, could stand erect and walk several miles. An attack of influenza, was followed by pulmonary tuberculosis, from which she died.

The author operated upon a woman, 58 years old, and stout, for strangulated hernia. Her intestine was covered with miliary tubercles. In spite of this fact, she appeared to be well before the accident to her hernia.

DUNN, J. F. L.: **Dilatation of the Heart.** *Kentucky Medical Journal*, 1921, xix, 270.

"There are, according to Anders, two causes, first, increased endocardial tension, second, diminished resistance".

About the first symptom is shortness of breath on exertion, this increases until the patient can scarcely talk on account of hurried respirations, and has to sit up, day and night, in order to breathe, the heart palpitates and there is a sense of oppression in the cardiac region, in mild cases there is pallor but in severe cases there is cyanosis, with cold extremities, edema develops and sometimes there is ascites and hydrothorax. By percussion we can determine the area of enlargement, the area of dulness extends over the entire area of the heart.

Treatment consists of absolute rest in bed, with very light and nutritious food, the bowels should be moved regularly and flatulence should be prevented as any abdominal distension caused some effort on the heart.

The best cardiac stimulant in these cases is digitalis, this should be pushed to full physiological effect. Strychnin, caffein, and strophanthus are also valuable.

The patient should not be allowed to get out of bed too soon when convalescing and after he recovers sufficiently to go about, his occupation should be sedentary.

ROGERS, SIR L.: **Treatment of Asthma by Autogenous Streptococcal Vaccines.** *British Medical Journal*, July 16, 1921, No. 3159, p. 71.

The vaccine treatment in asthma was used extensively by the author in Bengal, India, who reports the results in two series, first that of some 13 patients, and secondly 40.

The method consists in making cultures from the sputum, preferably that obtained during or soon after an attack, subculturing a number of colonies of streptococci, including any short chain pneumococci, so as to include a number of strains, and making up a vaccine of the strength of 100 millions in 1 c. c., which can be conveniently put up in one of Wright's small rubber-capped bottles.

The initial dose is  $\frac{1}{4}$  to  $\frac{1}{2}$  c. c., and as soon as little or no reac-



tion ensues it is rapidly worked up to 1 c. c. weekly, and after several such doses to  $1\frac{1}{2}$  to 2 c. c., the largest doses being given at intervals of ten days. If any marked reaction or temporary increase of the symptoms occurs the dose should be decreased to one-half, and cautiously increased again when no reaction follows an injection. The treatment usually has to be continued for two or three months and sometimes longer, several injections being given after definite improvement is observed to obtain more lasting results. There has been no selection of cases; all those treated since an earlier report by the writer, were followed up for several months to allow sufficient time to enable him to judge the results.

The patients may be conveniently grouped in the following classes, beginning with the failures:

(1) *Failures.*—They number 6 out of 40, or 15 per cent. In 2 severe reactions without benefit occurred; in one of them the symptoms appeared to be anaphylactic in nature.

In 2, no effect was produced, but one of these had only three injections and could not be followed up, so the treatment did not get a fair chance. In one much benefit followed for five months, but was probably due to a change of climate, so it is included among the failures, as he relapsed. In one some benefit followed, but he was cured later by nasal cautery. On the other hand the author stated he has seen several other cases in which nasal treatment failed but vaccines were subsequently successful.

(2) *Good Immediate Effect but Relapse within One Year.*—This was observed in 7 cases, or 17.5 per cent. In 2 the relapse was as severe as before, although seven and ten months' relief respectively was afforded. In one much relief was afforded for nine months, and further benefit resulted from a second course, although the patient was aged 65 and had had asthma for ten years.

In 4 slight and less frequent attacks recurred after from five to nine months; chills brought on the attacks in two instances, but the patients were very much pleased with the great relief afforded them, although it was temporary in two and partial in the remaining three.

(3) *Good Effect for a Year or More, but Subsequent Relapse.*—This occurred in 6 cases, or 15 per cent. In one a slight relapse occurred after a wetting at the end of a year's freedom. In one after twenty-six months' freedom a relapse followed a wetting, but the patient kept well again later. In one a relapse occurred after influenza,

and the later history is not known. In two a relapse was followed by freedom from asthma or greatly lessened severity of the disease for further periods of one to two years.

Thus in all these cases very great benefit of from one to three years' duration resulted.

(4) *Good Effects up to Six to Nine Months When Last Heard Of.*—The number of cases in this series was 5, or 12.5 per cent. In all the immediate effect of the treatment was very satisfactory, although they could not be followed up for long; in view of the results obtained in the next series, there is, however, every reason to believe that in most cases in this class (4), the relief was also of considerably longer duration. All except one were chronic cases.

(5) *Good Effect Maintained for at Least One to Four Years.*—Considerably the largest number, 16 cases, or 40 per cent fall into this most satisfactory class, in which complete or almost complete relief was afforded for a long time. Thus, when the patients were last heard of, the benefit had in nine instances lasted one to two years; in three it had lasted two to three years; and in four from three to four years.

That Class 5 was not by any means composed of early or favorable cases will be clear from the following data.

The average age of the patients was 40.5 years.

The average duration of the disease was five years.

The average duration of the treatment was three months.

These results appeared to the writer as very satisfactory, especially when it is remembered that the patients were all treated in the extremely trying damp, hot climate of Lower Bengal, which is notoriously unfavorable to asthmatic patients, as pointed out in 1886 by Norman Chevers. Many of them were very liable to colds and bronchial trouble, and these conditions also were much relieved. Only patients with well marked asthma are included in the above series, the bronchial type of asthma being the prevalent one in Bengal.

In view of favorable reports on the use of intravenous injections of peptone in asthma it occurred to the author that his vaccines might contain an appreciable dose of peptone; but analyses made by his colleague, Major Shorten, I. M. S., Professor of Physiology, Calcutta, excluded this explanation. They, therefore, appear to be due to immunization against the streptococcal group of organisms, which are so frequent a cause of bronchial and throat infections, and a com-



mon excitant of asthmatic attacks in persons liable to them. The writer says he did not attempt to separate and colonize this wide group of organisms, as he believes in the simpler plan of using a number of colonies to make subcultures from the original culture tubes for preparing vaccines. He says it can readily be carried out in any small bacteriological laboratory, and has furnished results which have been most satisfactory.

*Conclusions.*—(1) In 15 per cent of the cases the treatment failed to give material relief of a lasting nature.

(2) In 32.5 per cent great relief was afforded, but it was either not permanent or it was incomplete.

(3) In 52.5 per cent the patients remained well when last heard of from one-half to four years after the treatment.

GWATHMEY, J. T., AND GREENOUGH, J.: Synergistic Analgesia with Nitrous Oxid-oxygen and Magnesium Sulphate. *Medical Record*, October, 1921, c, 283.

American statistics (Gwathmey, J. T., *Anesthesia*, p. 843) embracing nearly 500,000 administrations, show that sequences and combinations are far more safe than any single method or agent. "Laboratory experiments prove that with preliminary medication the margin between complete anesthesia and respiratory arrest is lengthened, making anesthesia a safe procedure. Geoffrey Marshall (*Transact. Roy Soc. Med.*, London, 1917) has shown that in severely shocked patients nitrous oxid-oxygen is not followed, as is ether, by a fall in blood-pressure two or four hours after operations".

"Pharmacologists are agreed that nitrous oxid is the least harmful of any of the general anesthetics in its effects upon the tissues and organs of the body. But nitrous oxid-oxygen, used alone, is immediately dangerous when pushed to the point of saturation, *i. e.*, when the patient is cyanosed with dilated pupil and apnea, it is the most dangerous of all anesthetics".

Meltzer and Aner and their associates have proven that magnesium sulphate is not only an anesthetic, but also that it has no deleterious effect upon any of the tissues or organs of the body. Meltzer made the mistake of using it alone.

The most desirable anesthetics are magnesium sulphate, morphin

and nitrous oxid-oxygen. The patient is rendered analgesic with magnesium sulphate and morphin, and anesthetized with nitrous oxid and oxygen. The patient sinks into unconsciousness without struggling, fully relaxes during operation, and emerges without nausea, vomiting or pain.

To Dr. A. V. S. Lambert is due the credit for the development of the technic with nitrous oxid and oxygen. Two soap-suds enemata one hour apart or soap-suds enema followed by a thorough irrigation until the return is clear, are given the night before the operation. Two hours before the operation a chloretone suppository, grains 14, is given. A half hour later a breast hypodermoclysis is given of 300 to 400 c. c. of a sterile and chemically pure 4 per cent solution of magnesium sulphate at 110° F. (37.77° C.). The first hypodermic of morphin is given one and one-half hours before the time set for the operation and consists of one-eighth of a grain. It may be given in plain water or magnesium sulphate. This is repeated at 15 to 20 minute intervals, until the full amount is given. Nitrous oxid and oxygen are administered on the operating table.

CARSLAW, R. B.: **Acute Pancreatitis, Followed by Pancreatic Cyst.**  
*Lancet*, London, 1921, ii, 132.

A case of acute pancreatitis with pancreatic cyst in a woman, aged 27 is reported. Two weeks after the birth of a child severe pain suddenly developed in the upper abdomen and back. This continued for five weeks, during which time there was loss of appetite, irregularity of the bowels and occasional elevation of temperature. Three weeks after the birth of the child, a tender mass about the size of a hen's egg, was discovered in the left hypochondrium, and two days later a marked increase in pain was accompanied by almost incessant vomiting. On examination on November 3, the mass had increased in size and was very tender. No jaundice. Urine acid, containing a trace of albumin but neither blood nor sugar. The condition became much worse; there was slight cyanosis and the abdomen was becoming greatly distended.\* The tender mass now filled epigastric and both hypochondriac regions. The abdomen having been opened in middle line, the pancreas was found to be enormously enlarged, stomach and transverse colon being displaced downwards. The pan-



creatic enlargement which was covered by the gastro-hepatic omentum, was solid, uniform, yellowish in color, and involved the whole gland. There was marked edema of the peri-pancreatic tissues and in the vicinity of the tail, fat necrosis was present. The gall-bladder was distended and contained numerous calculi. The gall-stones were removed and the gall-bladder drained. From the fifth day there was rapid and uninterrupted improvement. In two weeks the condition was quite good. Four weeks after operation there was a recurrence of vomiting and within the next week a painless swelling appeared which soon filled the epigastric and left hypochondriac regions. An estimate of the fat in the stools at this time showed a slight degree of pancreatic insufficiency. On operation, the swelling was found to be a large cyst of the tail of the pancreas, about the size of a child's head. The cyst had pushed the stomach upwards and the transverse colon downwards. It was exposed through the gastro-colic omentum, incised and emptied. It contained a large quantity of slightly turbid, straw colored liquid, and a considerable quantity of yellow putty-like material of a tenacious character was adhering to the lining in several places. The cyst was unilocular, and the lining was smooth and shiny. The edges of the opening having been stitched to the parietal peritoneum, the cavity was packed with gauze. There was immediate improvement after the operation. Two months after the operation the cavity had become completely obliterated. There was evidently at first a subacute inflammation in the tail of the pancreas; later there occurred a sudden spread, and within 12 hours of admission there was a typical acute pancreatitis involving the whole organ. The relief of the symptoms which followed the removal of the biliary calculi and drainage of the gall-bladder is difficult to explain in the absence of jaundice. The vomiting which recurred on the development of the cyst was clearly due to pressure on, and displacement of, the stomach, and duodenum, and the consequent interference with their mechanical function. It was remarkable that, notwithstanding the size of the swelling, all other symptoms were absent, there was no pain, no jaundice, no glycosuria, no steatorrhea, merely a slight degree of pancreatic insufficiency. The formation of the cyst was not due, as is usually the case, to a chronic, indurative pancreatitis, but was caused by the blocking of ducts, either by secretion which had become tenacious, or by necrotic pancreatic tissue. It is significant that it occurred in the tail, the part

of the gland which was earliest and most acutely affected. The change in position of the organs is interesting.

DAVIS, B. B.: **Thrombosis and Embolism of the Mesenteric Vessels.**  
*The Nebraska State Medical Journal*, April, 1921, vi, 101.

Five cases with definite disturbance of the circulation of the superior mesenteric artery and vein on their branches are reported.

*Case I.*—Man, aged 47, had severe attack of pain in right iliac fossa. Took cathartic and was better. Few days later was indisposed and could not eat. Began having diarrhea and nausea. Later passed some small hard shot-like particles from bowels. During four days has vomited several times, has been distended with gas. No pain, but is sore over abdomen. Heart somewhat crippled by an old endocarditis. Next day abdomen rigid especially in umbilical region. Tenderness over whole abdomen. Operation: on opening abdomen some adhesions about the appendix were found. The striking thing found was gangrene of the lower ileum extending from 5 inches above the ileocecal valve for 28 inches upward. This amount of ileum was resected and an end to end anastomosis made. Recovery was prompt. Diagnosis was embolus of a terminal branch of the superior mesenteric artery.

*Case II.*—Woman, about 50, had a hernia. Three days before her entrance an advertising hernia specialist had injected her hernia with some material. She suffered severe pain and 36 hours later had a severe abdominal pain, vomiting and prostration. Examination showed a temperature of  $100.8^{\circ}$  F. ( $38.22^{\circ}$  C.), pulse 136, of poor quality, and abdomen rigid and distended. Operation showed a septic peritonitis. Cavity contained quantity of fecal matter and pus. Coils of intestine were dilated and there was a gap in the small intestine at the lower part of the jejunum. The opening was one-third of an inch wide and its length corresponded to the distance from the mesentery to the exact opposite side of the intestine. Artery had been blocked and the perforation corresponded with the area supplied by one of the terminal branches of the vaso-intestine tenuis. The hole was turned in, sutured and free drainage used. She grew worse and died. Three hours before death her rectal temperature reached  $107.4^{\circ}$  F. ( $41.88^{\circ}$  C.).



*Case III.*—Woman, age 22, three and a half months pregnant, had a sudden severe pain low down on the right side, followed by vomiting. Had usual symptoms of a not very severe acute appendicitis, was tender and rigid over right iliac region with temperature 100° F. (37.77° C.). Operation performed and incision made along outer side of right rectus muscle. Gangrenous omentum presented in the wound and the entire great omentum was found gangrenous up to its attachment to the colon. Lower free portion of omentum was attached to an acutely inflamed but non-gangrenous appendix. Appendix removed and entire great omentum removed by ligating it off in small sections close to colon and cutting it away. Colon seemed normal, but no circulation to any part of omentum. Recovery uneventful. Condition was an ascending thrombosis starting from its point of contact with the infected appendix.

*Case IV.*—Man. Infected tooth had been pulled but previous to this a tender swelling had appeared on left side of neck. Tender swelling in left parotid region under left ear, temperature 101.6° F. (38.66° C.), almost lost use of voice. Pus drained out. Temperature rose later and right side of neck was tender and swollen. Pus drained from that side and temperature dropped to 99° F. (37.22° C.). Rose to 103° F. (39.44° C.) soon and breathing became labored, abdomen distended and he died.

Autopsy showed pus had burrowed down along trachea and aorta to the bifurcation of the abdominal aorta. Small intestine was gangrenous due to a septic thrombosis of the superior mesenteric artery.

*Case V.*—Man, age 29, acute abdominal pain, six enemas without results during day. Distended abdomen, tender all over, but no especial rigidity of abdominal muscles. Temperature 98.5° F. (36.94° C.), pulse 80. Operation for appendicitis advised. Abdomen opened and entire small intestine was gangrenous. Peritoneal covering was dull and almost black. Mesenteric vessels were black. Near the ileocecal valve the color was normal, but four or five inches above there was a sharp line of demarcation between the normal and apparently gangrenous section. At this point there was a tense constriction. The remaining portion of ileum and all the jejunum were greatly dilated dark and lusterless. A small puncture was made in one of the veins in the mesentery. An almost inky condition of the blood was apparent, but it was still fluid or semifluid. As much as possible of the intestinal coils was delivered through the

incision and hot towels packed over them. After a few minutes a few places appeared mottled and a slight pinkish color appeared. After fifteen minutes application of moist heat the intestines were returned to abdomen and wound closed.

Heat was applied to abdomen for first few days. For three days the patient vomited frequently and there was abdominal destension. He began to pass gas and on fourth day bowel movement was produced by castor oil and recovery was uneventful. Cause is obscure. Arteries seemed normal and no indication of any infection.

Endocarditis, atheroma of the aorta and arteriosclerosis, especially of the mesenteric arteries are of first rank as causes of mesenteric thrombosis and embolism. The etiological factor may either be infection or vascular changes.

In Case I, there was an old endocarditis; in Case III, there was an ascending septic thrombosis of the vessels of the great omentum from contact with the infected appendix; in Case IV, there was a patient with general sepsis with pus present and almost in contact with the origin of the superior mesenteric artery from the abdominal aorta; in Case V, where restitution of the circulation occurred there was suspicion of a toxic substance from the intestinal canal.

Bloody and offensive stools are not necessarily present. Mortality is about 90 per cent. This depends upon amount of intestine involved and promptness of operation, when large part of intestine is gangrenous the case is hopeless; when a few inches or feet are involved a prompt operation before the intestinal wall is broken down, mortality should be low. When fecal contents and septic peritonitis is present there is high mortality.

WHITE, L. E.: **Accessory Sinus Blindness; Differential Diagnosis and Operative Technic.** *Laryngoscope*, St. Louis, August, 1921, xxxi, No. 8, p. 579.

Differential diagnosis depends upon the cause and the neurological examination with the general appearance and condition.

*Local Causes.*—Cellulitis of orbit, infections of orbit, wounds of orbit, tumors of orbit, thrombosis of orbital veins, hemorrhage into nerve sheath, wounds or tumors of optic nerve or globe, infection from accessory sinuses.



*Intracranial Causes.*—Pituitary lesions, tumors, hemorrhage, hydrocephalus, abscesses, cavernous sinus thrombosis.

*General Causes.*—Acute febrile diseases, nephritis, influenza, anemia, diabetes, syphilis, toxemia from lead, tobacco, alcohol, etc., toxemia from pus foci (accessory sinuses), and methyl alcohol, Leber's disease.

*Summary.*—A careful differential diagnosis is necessary in every case, but it is especially so in subacute or chronic forms and it is of the utmost importance to rule out central lesions and toxic infections. Permanent blindness may result, although some may recover spontaneously or under treatment. Oftentimes they need prompt surgical interference, especially where the size and position of the middle and superior turbinates are found to be blocking the posterior sinuses. Opening of the accessory sinuses for sudden loss of vision after the exclusion of other causes is advocated even with negative nasal findings. If due to accessory sinus trouble, there is pathology, but located so as to escape detection. Roentgenograms, in this case, are practically negative.

Complete ethmoid exenteration is unnecessary, unless enough trouble is found in the ethmoid to warrant it; a semi-radical sphenoid operation is free from danger and done under local anesthesia, sufficiently ventilating and draining the parts adjacent to the optic nerve. If due to toxemia from some other sinus, or from teeth or tonsils, these should receive attention.

The sphenoid operation should be in the hands of a skilled operator, as well as the other operations in this region.

BONIFIELD, C. L.: Report of Cases of Postoperative Convalescence Complicated by Faulty Functioning of the Ductless Glands. *American Journal of Obstetrics and Gynecology*, April, 1921, i, 677.

In future, surgery will find more accurate ways of estimating surgical risk. Certain individuals withstand operations from which the majority of people would die. We recognize some conditions of the heart, the lungs, and the kidneys, which may cause risk. Knowledge of blood-pressure is also valuable. But something still eludes our present means of investigation. It is necessary to use the means we have to their best advantage. The surgery that the

masses receive is not that of a few selected leaders, with special endowment by nature, special training, and special facilities. The average patient is even not examined properly as to heart and lungs, by the surgeon. In the hospital the urine is tested. Suitable preliminary treatment for any constitutional diseases is not usually given.

The author reports 3 cases where the endocrines seemed to play a part in postoperative sudden bad condition, one of removal of ovary, one of gall-bladder operation, one of appendectomy. The first responded well to pituitary administration, one to protoiodid of mercury, one to atropin and digifolin.

SHIER, R. V. B.: **Surgical Postoperative Treatment.** *Surgery, Gynecology and Obstetrics*, 1921, xxxii, 559.

The material was taken from cases where careful attention to detail was observed in the postoperative stage. There must be, first, hearty cooperation between surgeon and physician. "Masterly inactivity" and fussiness are equally undesirable. Mild cases may require little attention apart from what are usually considered unimportant details. Any case of magnitude requires close watching. Mortality and morbidity will be reduced.

Purgation the night before operation is harmful. The hospital and the operation are events in the patient's lifetime. Rest and quiet are indicated. A mild laxative may be given two days before operation, and simple enema on the evening before, and repeated the following morning. If the patient is restless and a good night's sleep necessary, sodium bromid, 20 grains, and chloral hydrate, 10 grains, or 1 grain of codein may be given by mouth. If the patient is weak or exsanguinated, a preliminary transfusion of whole blood is of decided value. Failing this, an intravenous injection of 1000 c. c. of 10 per cent glucose in normal saline is of decided value. The latter can be directly utilized as food, and is an admirable substitute for whole blood. Gastro-enterostomy cases receive gastric lavage the night before, one hour previous to operation. The author does not give morphin and atropin as a routine before the anesthetic on account of the risk of postoperative nausea. Another drawback is that pupil reflexes are lost as a guide to the anesthetist.



If shock is liable to occur, interstitial or normal saline at the commencement of operation is given. If there has been considerable blood loss, 6 per cent gum acacia is given intravenously to the amount of 1000 c. c. The gum must be dissolved in freshly distilled water and of course sterilized.

For three or four days after operations of any magnitude there are, as a rule, pain distention or meteorism, and nausea and vomiting. Routine administration of morphin sulphate,  $\frac{1}{4}$  grain, and atropin sulphate,  $\frac{1}{150}$  grain, hypodermically is adhered to in restless abdominal patients, who suffer from pain. Or strychnin sulphate,  $\frac{1}{30}$  grain, hypodermically every 4 hours for the first 48 hours. Murphy drip with glucose 10 per cent sodium bicarbonate, 5 per cent with concentrated tincture digitalis (B. & W.), 2 drachms to the first 10 ounces. Liberal doses of morphin and atropin, during the first 24 hours are the most beneficial, to combat pain and restlessness. Codein does not relieve severe pain. Aspirin with codein increases nausea. The argument of morphin causing distention, seems not to hold good at the present day. Some of the trouble attributed to it has been caused by small doses.

If used in sufficient dosage to relax spasm of the abdominal muscles and allow of painless contraction, the patient experiences little difficulty in expelling gas, and has no pain while so doing. The author gives strychnin mainly for its tonic action on the unstriated muscle fiber of the intestine, the prophylaxis of distention. Postoperative distention is easier to prevent than to cure. Digitalis is useful for this purpose. The author thinks that it has a direct action on the intestinal musculature, aside from that on the heart, it may be, through the vagus. After its use we have no difficulty in getting bowel action, and whereas formerly we prescribed pituitrin and eserin frequently, we now only occasionally use them. Postoperative treatment must be started within the first hour after the patient's return to bed. The Murphy drip must be no faster than 42 or 60 drops to the minute. Only 8 or 10 ounces of solution must be given, in order to insure absorption. The drip is discontinued from 3 to 4 hours, and repeated with glucose and soda alone. Digitalis will prevent tachycardia which occasionally follows cholecystectomy. Even with digitalis there may be a slight degree of meteorism. If so, pituitary extract, 1 c. c., is used by the author. It is immediately followed by a 1, 2, 3 enema containing 1 drachm of turpentine. The two must

be given at the same time, or the pituitrin a few moments after the enema. Pituitrin given 15 minutes before the enema is a faulty procedure. If pituitrin fails to work, 1/50 grain of eserine may be given. The types of vomiting are: first, anesthetic; second, acute gastric dilatation; third, obstructive; fourth, toxic; fifth, neurotic. The anesthetic form follows immediately, or a few hours after the anesthetic. There is persistent nausea and vomiting of any water taken and small quantities of bile. It should pass within 48 hours, even without treatment. If it persists longer there is a suspicion of the neurotic variety.

If there is a suspicion of the stomach not emptying, the stomach tube and a copious gastric lavage with weak sodium bicarbonate solution are indicated. If the stomach empties, 1 drachm peroxid and 6 drachms normal salt solution may be given for the vomiting. If the second dose is vomited, add cocain. Sometimes adrenalin and cocain act well; adrenalin 1:1000, minims 25, cocain 1/4 grain, normal saline, 2 ounces.

Repeat, if the first dose is vomited. During the second day, some patients are benefited by buttermilk or coffee, some by acid hydrochloric (diluted) and bismuth. A remedy used is benzyl benzoate of sodium, 15 minims, mixed with five times the quantity of 90 per cent alcohol. This is given in 2 or 3 drachms of water; the mouth must be immediately rinsed. The patients are permitted to take water in abundance.

Acute gastric dilatation occurs after cholecystectomy oftener than after any other operation, also fairly often after removal of large ovarian cysts. It is characterized by the vomiting of olive-green, foul-smelling material. It occurs, usually, about the third or fourth day, or earlier. Gastric lavage must be repeated every 2 hours and the patient kept on the right lateral position. The duodenal tube may be fastened by adhesive on the cheek. In a delirious patient it is almost impossible to pass the tube.

Obstructive vomiting occurs, as a rule, early in convalescence from paralytic ileus, or later, from bands of adhesion. If due to ileus, repeated lavage is necessary; if due to organic causes, operation must be considered. Since meteorism has been avoided, paralytic ileus has become rare.

Toxic vomiting occurs after prostatectomy and is an evidence of uremia. The indications are to flush the channels of elimination by



interstitial saline. Epsom salts and glucose, and soda intravenously, or per rectum may be given by mouth. Benzyl works best as a remedy by mouth.

Neurotic vomiting which persists after the third day is treated with sodium bromid, 100 grains per rectum, or sodium bromid 80 grains, and chloral hydrate, 40 grains, per rectum, may be repeated in 4 or 5 hours.

The author usually gives a dose of castor oil at the end of 48 hours. Food is liquid or semi-solid for the first 48 hours. Gastro-enterostomies are fed as any other case, usually put on malted milk, junket or custard on the second day. Morphin is rarely used, as a sedative, after 36 hours. Other sedatives or hypnotics are used when indicated.

ELLIOT, J. A., AND TODD, L. C.: *Acute Syphilitic Nephritis. Archives of Dermatology and Syphilology*, May, 1921, iii, 634.

Acute syphilitic nephritis as distinguished from a slight transient albuminuria is a relatively uncommon complication of syphilis. The report of a case which is illustrative of this unusual complication follows:

Man, aged 30, white, married. Complained of an eruption on body and face with weakness and loss in weight. Trouble began as a slight urethral discharge. Last extramarital exposure occurred about three months before. Rash on body ten days before entering hospital. Throat sore for three or four days. Nocturnal pains in shoulders, thigh and left side for two weeks. Had headache. Lost twenty pounds in five weeks. Scalp presented many pustular lesions covered by crusts. Many papulopustular lesions on forehead. On both tonsils were superficial ulcerative lesions covered with greyish pellicles. Over body was a profuse maculopapular rash, most prominent in the flanks with scattered pustular lesions. Confluent hypertrophic papulosquamous lesions on shaft of penis and around anus. In the urinary meatus there was a lesion involving the entire opening, this was indurated and had a serous discharge. General adenitis. Tendon reflexes and long bones normal, no edema, heart and lungs negative, spleen not palpable. Wassermann reaction strongly positive. Urine showed 7.5 per cent albumin, large hyalin and

lipoid-appearing casts and a few granular casts. Phthalein excretion 56 per cent in 2 hours, blood urea 58 mg. per 100 c. c.

Six injections of arsphenamin, with total dosage of 2.05 grams were given at weekly intervals the initial dose being 0.25 gram. Phthalein excretion and quantitative albumin determinations were made before each injection and twenty-four hours later.

At first examination blood urea determination was 68 mg. per 100 c. c. This indicates some degree of nitrogenous retention. Before fourth injection of arsphenamin it was less than 35 mg. but last examination showed 48.5 mg.

First phthalein excretion determination was 56 per cent for two hours. Patient had a marked nephritis but phthalein excretion was practically normal. This is observed in patients with acute nephritis. Phthalein declined to 46 per cent after second treatment; increased to 60 per cent preceding fourth injection. Decrease followed it to thirty-eight per cent. Increase in albumin in urine, thirty-two per cent and thirty-four per cent before and after sixth injection.

Albumin in urine 7.5 by bulk after first injection increased to 10 per cent; 1 per cent preceding fourth treatment and increase to 3 per cent following it. A week later only a trace of albumin and in last three examinations urine was negative.

The loss of weight was a prominent feature in this case. Impairment in health not proportionate to renal involvement. Number of casts small in comparison to amount of albumin. Though doubly refractile lipoids are of importance in establishing syphilis as the etiologic factor they are not abundant in other types of nephritis.

Points in diagnosis are:

- (1) Establishment of the existence of an early syphilis.
- (2) High albumin content of urine.
- (3) Doubly refractive lipoids in urine.
- (4) Therapeutic tests.

The specific treatment of this case consisted of arsphenamin injections followed by mercurial injections after the albumin had entirely disappeared. Initial dose of arsphenamin was 0.25 gram, followed by weekly injections of from 0.3 to 0.4 gram. As the desired therapeutic effect may be obtained with 0.3 gram of arsphenamin, this dosage should not be exceeded till albumin has disappeared from urine.



ORTON, W. A.: **Vegetable Problems in Diabetic Diets.** *American Journal of Medical Sciences*, October, 1921, clxii, No. 4, No. 595, p. 498.

Contradicting the idea "that diabetics must not expect a varied diet", Orton is growing 81 species of plants in 255 varieties suitable for the diabetic diet thus showing that it is possible to have some green vegetable every day in the year, and this without a greenhouse. The growing of these plants furnishes a hobby which is so desirable for these patients in keeping their minds off from the severity of their condition. Those who have no gardens of their own should form groups and make it worth while for the farmers to grow these special crops. The author gives a long list of the vegetables grown and full directions for their preparation for the table.

A. T. MAYS.

HASHIMOTO, H.: **The Heart in the Experimental Hyperthyroidism With Special Reference to Its Histology.** *Endocrinology*, September, 1921, v, No. 5, p. 579.

Administration of toxic doses of thyroid substance by mouth caused, in addition to enlargement of the heart, the appearance of myocarditic lesions, in a large per cent of albino rats. The myocarditic lesions consisted chiefly of dense accumulations of large "histiocytare" cells (Kiyono), derived from the clasmocytes present in the interstitial connective tissue, in small circumscribed areas between muscle fibers, or not infrequently in the neighborhood of the blood-vessels. These cells may be accompanied by a small or occasionally by a large number of cells of the lymphoid type, at earlier periods of the sequence of the myocarditic changes. In the later stages they may be associated with fibroblasts, increasing gradually in number, and eventually prevailing over the other type of cells. The muscle fibers may be destroyed in confined areas adjoining larger areas of change, or they may show slight but diffuse degenerative changes, apparently occurring independently of the interstitial changes previously described. Both the interstitial inflammatory proliferation, and the parenchymatous degeneration may be attributed to the thyroid intoxication, and hearts showing these lesions are

functionally inferior to normal hearts. In histological appearance these lesions are closely related to those observed by Aschoff, Tawara, and others, in the hearts of those suffering from rheumatism.

These lesions observed in experimental work are the same as have been described in human goiter hearts, and thyroid administration can cause not only tachycardia and hypertrophy, but also a chronic, non-suppurative interstitial myocarditis. The evidence lends support to the theory that the cardiac disturbances associated with goiter, are due to thyroid intoxication, and further, to an excess of thyroid secretion.

L. C. JOHNSON.

ST. GEORGE, A. V.: **Malignant Tricuspid Endocarditis; With a Report of Five Cases.** *American Journal of Medical Sciences*, October, 1921, clxii, No. 4, No. 595, p. 556.

Five cases of primary acute endocarditis of the tricuspid valve are reported. Bacteriologically the staphylococcus pyogenes aureus, pneumococcus, and the streptococcus hemolyticus were found. The lesion is very rare. The symptomatology is obscure, and the physical signs are few, simulating those of mitral disease and relative tricuspid insufficiency. The jugular pulse is present, slowly distending, systolic in time, with a slow, full liver impulse. Lung infarction, with or without abscess formation is almost constantly present and generally leads to a diagnosis of bronchopneumonia. Long-continued lung signs together with heart involvement, and an associated jugular and hepatic impulse makes one fairly certain of tricuspid endocarditis. The prognosis is unfavorable.

A. T. MAYS.

FINNEY, J. M. T., AND FRIEDENWALD, J.: **Pylorospasm in Adults: Its Medical and Surgical Treatment.** *American Journal of Medical Sciences*, October, 1921, clxii, No. 4, No. 595, p. 469.

The authors find three types of pylorospasm: neurotic, irritable, and reflex. The greatest proportion of cases is secondary to some irritative lesion in the stomach, or reflex from another abdominal



organ, such as cholelithiasis, chronic appendicitis, etc. In animals it is produced by stimulation of the vagus and inhibited by stimulating the splanchnic nerves. The fact that injections of certain extracts of thyroids and parathyroids will produce a pylorospasm, and adrenal extract will inhibit it shows a definite association with the endocrine system. The symptoms are characteristic: pain two or three hours after meals, relieved temporarily by food (hunger pains); tender area in the region of the pylorus; hyperacidity; intermittent stagnation; resistance over pyloric region assuming the character of a small tumor which gradually disappears. The x-ray will differentiate the organic from the nervous form. In treatment medical measures directed toward relieving the spasm are first tried. In over-coming the neurasthenia dietetic and hygienic measures are most useful. Atropin is given in full doses; morphin, if necessary, following a thorough gastric lavage. If surgical intervention is necessary, pyloroplasty is the operation of choice.

A. T. MAYS.

**MACHLACHLAN, W. W. G.: Pericarditis: Incidence and Diagnosis.**  
*American Journal of Medical Sciences*, November, 1921, clxii, No. 5, No. 596, p. 654.

In 975 autopsy cases 100 had pericarditis in some form. Five per cent were acute and there were three times as many among males as among females, and more cases occurred after the age of forty. Four per cent were chronic, a little less than half being of the general adhesive type, cases in males predominating. One per cent was tuberculous, predominating among males, three-fourths occurring before the age of forty. In acute and chronic forms the chief etiological factor seems to be associated with acute rheumatic fever. In 7 per cent of acute lobar pneumonia pericarditis was present, in most instances appearing shortly before death. The streptococcus produces suppuration more often than the pneumococcus. In 54 cases of tuberculosis there was no evidence of tuberculous pericarditis, but when it does appear it is of the serofibrinous variety, its primary focus being in the lymph nodes of the thorax or in the lungs. Miliary tuberculosis usually misses the pericardium. When acute pericarditis is persistent for a long period, with cardiac enlargement, and an

associated progressively downward clinical course, tuberculous pericarditis is suspected. A friction rub is the most valuable diagnostic sign of acute pericarditis, while there are no distinctive signs of chronic adhesive pericarditis.

A. T. MAYS.

INLOW, W. DEP.: **The Spleen and Digestion.** *American Journal of the Medical Sciences*, September, 1921, clxii, No. 3, No. 594, p. 325.

Results from previous experiments have been contradictory, the chief theory having been that the spleen gave a substance to the blood during digestion that activated an increase of enzymes, especially pepsin. The author's is an experimental study on gastric secretion before and after splenectomy on three dogs with accessory stomach pouches, and two similar dogs serving as controls. No noteworthy changes in gastric secretion occurred after removal of the spleen except a slight diminution in quantity of gastric juice. The pepsinogenic function of the spleen has not been demonstrated, and the relation of the spleen to gastric secretion is probably merely vascular, the diminution in amount of juice secreted after splenectomy being attributable to decreased gastric blood supply from injury to the gastrosplenic circulation.

A. T. MAYS.

SMITH, S. C.: **The Heart Irregularity Called "Sino-Auricular-Block".** *American Journal of Medical Sciences*, October, 1921, clxii, No. 4, No. 595, p. 575.

During the past ten months the author has collected 14 cases. It is not a pathological but a physiological manifestation in certain hearts as the pulse rate returns to normal from the stimulation of exercise. The rhythmic action of both auricle and ventricle is disturbed as shown by a cycle of unusual length usually slightly shorter than two normal cycles in the same lead. The intermittency produces no subjective symptoms, or variation with respiration as does sinus arrhythmia or premature contractions. It is not dependent upon or secondary to infections as it may occur in well individuals



who have no other clinical evidence or physical signs of cardio-circulatory disturbance. It may follow physical exertion, mental excitement, emotional strain, exercise, and administration of drugs.

A. T. MAYS.

BLUMGARTEN, A. S.: **The Diagnosis of Primary Lung Tumors.** *American Journal of the Medical Sciences*, September, 1921, clxii, No. 3, No. 594, p. 376.

Two types of primary lung tumors are distinguished clinically as: (a) those that originate at the pleural surface, and (b) those that originate at the hilus of the lung, and usually from a bronchus. The pleural type will show a one-sided pleural effusion, with or without bloody fluid, in the absence of a definite diagnosis of tuberculosis. The roentgenograms of the chest taken when the pleural cavity is inflated after removing the fluid is one of the best procedures to demonstrate the tumors of this type. It is the type most amenable to treatment. Its most important indications are the persistence of chronic bronchitis in the absence of tuberculosis, even though the sputum is blood-tinged. The mediastinal mass will cause pressure symptoms. Bronchoscopic examination is of greatest diagnostic value.

A. T. MAYS.

REGAN, J. C.: **The Advantage of Serum Therapy as Shown by a Comparison of Various Methods of Treatment of Anthrax.** *American Journal of the Medical Sciences*, September, 1921, clxii, No. 3, No. 594, p. 406.

Statistics show the advantage of serum treatment, both locally and intravenously, in anthrax. It yields the lowest mortality rate, offers the least amount of scarring and deformity, and, if used in time, is a safeguard against generalization of the local disease. The plan of dosage varies according to the severity of the case. A case of septicemia naturally requires larger and more frequent doses than a mild case. A blood culture is first taken and gives one an index of the severity of the case, and during the interval elapsing before

this report is returned, the usual treatment is begun. Cases without anthrax septicemia are divided into (a) mild, with little constitutional disturbance, small, well circumscribed lesion and little edema, (b) moderate, definite constitutional symptoms, medium-sized lesion, moderate induration and edema, and (c) severe, marked constitutional symptoms but blood culture negative, extensive local edema and angry appearing pustule. The mild cases receive four to six intravenous injections of 50 c. c. each, every four to six hours, plus two intramuscular injections the next day if needed. Also local serum therapy. Moderate cases get six to eight intravenous injections of 80 c. c. each every eight hours (the last three being intramuscular if response is early to the intravenous ones), plus local serum therapy. In severe cases 100 c. c. are given every six hours for four injections (or until controlled), and then the dose is reduced to 50 c. c. every 12 hours intravenously or intramuscularly. Local serum injection every six hours. In septicemic cases, blood culture positive (the most fatal variety), 150 c. c. are given intravenously every three hours, plus local injections every four hours. Salvarsan sometimes proves a useful adjunct. Locally 7 to 10 c. c. are injected at intervals about the pustule, just beyond the blanched zone, one to three times according to the severity of the case.

A. T. MAYS.

HAY, J.: **Prognosis in Patients Presenting Rapid Action of the Heart.**  
*Lancet*, October 8, 1921, ii, No. 15, p. 750.

The power of accurate prognosis is a good test of a man's knowledge of medicine. This is only possible with accurate diagnosis, familiarity with the disease and a correct valuation of symptoms. This applies especially to the prognosis of cardiac conditions.

The most frequent deviation from the normal cardiac rhythm is tachycardia. This is usually divided into extracardiac and cardiac. The former occurs after emotion, effort, fever, anemia hyperthyroidism, and toxemia. Tachycardia of cardiac origin usually is an evidence of paroxysmal tachycardia, auricular flutter, or fibrillation.

Normally the rapidity of the heart's action increases the output of blood. After exercise this may amount to four times the normal at rest. When the rate is maintained at a high level without an in-



crease of output or in the absence of an indication for an increased output the efficiency of the heart diminishes. In myocardial disease the diminished output per beat is compensated by an increased number of beats. When this rate becomes excessive as in aortic regurgitation or in hypertension, the prognosis becomes grave as it points to a severe affection of the heart muscle. It is a valuable indication of progressive myocardial failure.

Tachycardia in children without any other physical signs or symptoms is of no consequence. In tuberculosis without fever rapid heart action is of grave significance and justifies a serious prognosis. The tachycardia of valvular disease is usually not caused by the valvular lesion but is of nerve origin. This applies especially to mitral stenosis.

The prognosis in paroxysmal tachycardia depends upon the rate and the duration of the attack. It then becomes a question of fatigue of the heart muscle. If the ectopic stimulus originates in the ventricle as demonstrated by the electrocardiogram, the prognosis is serious. A variability in the rate of the pulse such as 80, 106, 160 suggests auricular flutter. The ratio of the ventricular contractions to the auricular systoles would in this case be as 1:4, 1:3, 1:2, since the auricle beats at the rate of 320. If the tachycardia is accompanied by an irregularity fibrillation probably exists. The prognosis depends upon the response to treatment. If the flutter can be broken it is good. Fibrillation of rheumatic origin gives a better outlook than that of luetic or arterio-sclerotic nature.

H. JOACHIM.

LINTHICUM, F. H.: **Ozena and Its Relation to Tuberculosis.** *American Journal of the Medical Sciences*, August, 1921, clxii, No. 2, No. 593, p. 216.

The frequent incidence of tuberculosis in ozenatous patients brought to the author's attention that ozena might be a possible cause of pulmonary involvement. The lesions are characterized by a greenish black crust formation, a sickening odor, and confined to the mucous membrane of the nose, pharynx, and possibly the larynx. It begins in childhood and is a progressive chronic condition, lessening in severity as old age approaches. It is associated with filth in the

lower classes and there is evidence of its contagiousness. Pathologically it does not resemble the tubercle, but bacteriologically there is found an acid fast rod-shaped bacillus, curved and beaded, identical in appearance with the tubercle bacillus. In the author's series of cases, 3 out of 9 showed frank pulmonary tuberculosis, and 3 less active. In literature 40.4 per cent had clinical tuberculosis and 56.6 per cent had a tubercular family history.

A. T. MAYS.

LEMANN, I. I.: **Diabetes Mellitus, Syphilis and the Negro.** *American Journal of the Medical Sciences*, August, 1921, clxii, No. 2, No. 593, p. 226.

Diabetes is more prominent among the white than among negroes, as shown by Lemann's work in southern United States. It is not as rare among the negroes as was once thought. Diabetes is on the increase and both races are affected in the same proportion of increase. There is no relation between the incidence of diabetes and syphilis, and there is no probable etiologic relation. It seems that the unexplained immunity of the negro to spirochetal pancreatitis is as great as their immunity to the production of locomotor ataxia.

A. T. MAYS.

BARLOW, N., AND THOMPSON, J. C.: **Small Pneumothorax in Tuberculosis.** *American Review of Tuberculosis*, October, 1921, v, No. 8, p. 611.

"Indicating signs" by x-ray are the deviation of the trachea and mediastinum annular shadows, and bands and zones of density and rarefaction which do not conform to those which would be expected from any probable course of development of a tuberculous process.

Clinically the most useful classification is into the central and lateral groups. The central group includes all these which lie in relationship to the median half of the lung. The lateral group includes not only those of the superficial group which lie over the lateral half of the lung, but also interlobar pneumothoraces which are large enough to approach the lateral surface of the lung. In a care-



ful study of over a thousand cases of nontuberculous disease, we have found no instances of the presence of a small pneumothorax in the areas which are characteristic of tuberculosis. The metallic phenomena, marked tympany, and complete suppression of all breath sounds are not characteristic of very small pneumothorax. There is no single sign which cannot be produced by other pathological condition. On inspection deviation of the trachea may be perceived, with usual signs of early tuberculosis. Palpation confirms deviation of the trachea. The primary percussion change of a small pneumothorax is the production of true tympany as distinguished from hyperresonance. Owing to thickening of or deposits upon the pleura, this soon becomes dullness, with or without tympanitic overnote and may simulate ordinary hyperresonance or impaired resonance. In the collapsed area slight or marked dullness is of course to be expected. In moderately advanced tuberculosis the majority of the conditions which are diagnosed as superficial dry cavities are not really cavities, but small pneumothoraces in which the physical signs are unusually striking. An entirely superficial pneumothorax causes diminished breath sounds and the formation of pleural exudate causes a diminution of the intensity of all auscultatory phenomena in the course of time. The symptoms of onset are often so slight that the patient does not notice them. The clinical symptoms include pain in the chest as substernal pain, disturbances of the blood-pressure and pulse rate when the region of the heart and great vessels or pericardium is affected, slight dyspnea and reflex symptoms which follow irritation of the pleura. These include dilatation of the pupil, trophic disturbances of the muscles, radiating pains, and alterations of the voice. In very early cases of tuberculosis, it is more likely that the entire involved area may be more or less collapsed by the pneumothorax. In such cases there may be complete suppression of râles and clinical symptoms of the disease almost entirely disappear. This collapse of tissue favors the development of fibrosis. In the advanced cases the area collapsed is likely to be so small an area of involved active process that it makes little difference in the general condition of the patient. In two years work with several thousand patients, the authors have found that these small pneumothoraces occur only in tuberculosis. Tuberculosis at the hilum or near the interlobar septa, if at all active, usually reaches the pleura at some point, and almost invariably produces a deep-seated localized pneu-

mothorax. The presence of localized pneumothorax indicates an active tuberculosis.

C. A. SCHMID.

CORPOR, H. J., GAUSS, H., AND RENSCH, O. B.: **Studies on the Influence of Carbon Dioxid on Resistance to Tuberculosis. The Effect of Carbon Dioxid on the Tubercle Bacillus.** *American Review of Tuberculosis*, September, 1921, v, No. 7, p. 562.

Humoral antibodies have failed to explain resistance to tuberculosis, the lymphocyte as the important factor is rapidly being discarded, allergic phenomena require further elucidation, and the phagocytic action of the wandering cell is recognized as important. But both the humoral and cellular mechanisms of resistance leave much to be explained.

Weber's empiric reasoning that the deficiency of carbon dioxid in the body favors tuberculosis, while an accumulation retards the process, seems to be highly significant, but his disregard of laboratory procedures precluded his crystallizing the conception, in so far as it deprived him of the specific data essential to substantiate his theory. However, his main empirically reasoned principles appear to be substantiated by our experimental work.

The authors have observed that 3 per cent carbon dioxid causes some inhibition of growth of the tubercle bacillus in the test tube and 15 per cent is tuberculocidal. Tubercle bacilli will not grow in a carbon dioxid free atmosphere. Cultures of tubercle bacilli buried in the tissues of animals and permitted to acquire the carbon dioxide concentration of the body are definitely inhibited in their growth, while other cultures similarly buried, except that ingress of atmospheric air is permitted, show no inhibition.

When viable tubercle bacilli are placed in a closed system, their growth becomes inhibited as the carbon dioxid which the organisms elaborate approaches the concentration of approximately 5.5 per cent; at which concentration respiration of these organisms is also reduced to a minimum. In a closed system the end products of metabolism automatically inhibit the growth of the organisms that give rise to them. This, of course, holds true in a measure for all biological growth phenomena, usually, that the end products of metabolism if



permitted to accumulate will attain a concentration at which they become toxic to the organisms elaborating them and consequently inhibit their growth and later may even destroy them.

The significant feature of this study with the tubercle bacillus is that the concentration sufficient to inhibit definitely its growth, namely 5.5 per cent, occurs normally in the human body; and the experiments conducted both in the test tube and in the animal body indicate that this concentration actually does inhibit the growth of the tubercle bacilli.

It appears, therefore, that this factor is extremely significant in the rôle of resistance to tuberculous infection and the subsequent development of the disease in the body; further that the normal body apparently possesses, by virtue of containing sufficient carbon dioxide, the ability to inhibit the growth of the tubercle bacillus. Experiments are now in progress to study further phases of this problem.

C. A. SCHMID.

BALDWIN, E. R., AND GARDNER, L. U.: **Reinfection in Tuberculosis. Experimental Arrested Tuberculosis and Subsequent Infections.** *The American Review of Tuberculosis*, August, 1921, v, No. 6, p. 429.

In summarizing this scholarly article the authors state, "It is evident from what has been presented in the experimental and pathological study on man and animals that successive infections do occur, and that the first often modifies the course of the later ones."

In comparison with the case with which a primary infection is acquired, the later inhaled and ingested bacilli are resisted more or less strongly by the relative "immunity from infection". In applying these principles to human tuberculosis we note many evidences of confirmation which in the main are satisfactory. There are reasons to suspect mild infections, both as to quantity and virulence, occurring infrequently but by a cumulative effect, ultimately arousing the disease process. The earliest exogenous reinfections are probably often well resisted and may produce no noticeable symptoms. Good physiological functions combined with the immunity from infection tend to ward off further infection after adult age is reached. Should the condition be otherwise than favorable, or the infection be frequent or potent, disease results.

We have discussed the unlikelihood of massive infections by inhalation, and the doubt about other ways of reinfection. From the very small quantities taken in at one time and the slow development of the disease we are inclined to the theory of cumulative infection during childhood and youth. The majority of individuals who are to develop pulmonary tuberculosis for the first time after the age of twenty have already acquired it to a degree. Were it possible to discover these potentially diseased cases, who may or may not break down, we believe there would be but a small percentage not accounted for among the victims of tuberculosis in civilized countries. It is virtually impossible to associate many cases of clinical tuberculosis in adults with a recent exogenous source of infection, except under family exposure. Even in family disease, as is well known, the patient often develops the first recognized symptoms years after the death of the relative. The results of wholesale physical examinations are impressive in the number of unsuspected pulmonary cases in fair health. What happens to many of these may be surmised from the increased mortality during the war, and from the sanatorium records of relapse. Under the strain and with acute influenza, others have come to knowledge but are not yet recorded in the mortality tables.

C. A. SCHMID.

WHITE, P. D., MARVIN, H. M., AND BURWELL, C. S.: **The Action of Quinidin Sulphate in Heart Disease to Abolish the Circus Movement of Auricular Flutter and Fibrillation.** *The Boston Medical and Surgical Journal*, December 1, 1921, clxxxv, No. 2, p. 647.

Wenckebach in 1914 reported the repeated restoration to normal rhythm by 1 gram (15.43 grains) of quinin in a case of auricular fibrillation. Frey in 1918 reported success in 2 cases with quinin, and in 6 out of 10 cases with quinidin. In April, 1921 he reported 50 cases in which at least temporarily, rhythm was normally restored, in 21 cases. Out of a total of 228 cases reported in the literature by various workers, 130 have shown a restoration to normal rhythm, *i. e.*, 57 per cent. Lewis has shown experimentally that the most striking action of quinidin upon the auricle is a lengthening of the refractory period in 5 per cent of the experiments. It also slows



the conduction in the auricle. These two actions are opposed so far as abolition of the circus movement goes. Preponderance of one or the other effect may explain success or failure in the action of quinidin in a given case of auricular fibrillation. At least part of the action of quinidin is brought about by the paralyzing effect on the vagus nerve as shown by the rise in the ventricular rate and increase of the refractory period of the auricular muscle. The drug was used in The Massachusetts General Hospital in 35 cases since May, 1921. Of these 25, or 71 per cent, have shown a temporary restoration to normal rhythm. The duration of normal rhythm has varied from a few hours to over four months, the last named case has remained normal up to the time of report. The drug was tried in all cases of fibrillation, young or old, rheumatic, arteriosclerotic, and thyroid, and they have succeeded or failed no matter what type or age. The effect of the drug was studied in 6 normal hearts and 1 case of complete heart-block and there were no obvious effects in these cases. The dosage consisted of 0.2 gram (capsule) given at 2 and 4 p. m. of the first day, and then if no toxic effect was noted 4 grams were given at 10 a. m., 12 m., 2, 4, 6 p. m. the next day and each succeeding day until normal rhythm was restored or toxic symptoms or signs appeared. The total course dose varied from 0.8 gram in a successful case to 15.6 grams in a failure. It is still undecided whether it is necessary to continue occasional or steady rations of quinidin after normal rhythm is restored, or wiser to discontinue it altogether. Another doubtful point is whether it is wise to digitalize the patient before giving the quinidin and also the wisdom of giving both drugs together. The authors' experience leads them to believe that digitalized cases are more apt to respond to the quinidin and it is better not to give the two drugs together. Toxic symptoms and signs they found to be rare. Headache, buzzing of ears, nausea and slight blurring of vision were complained of by a few. In some cases the pulse rate rises, and the cases in which the pulse rate rises quite early and high were more likely to be restored to normal rhythm. Embolism did not occur in any case except one which suggested a splenic infarct. Daily electrocardiograms showed interesting observations. There was a coarsening and decrease in rate of the auricular deflections, an increase of the ventricular rate, the frequent occurrence of auricular flutter as a transitional stage between fibrillation and normal rhythm, and the occasional production of intraventricular block.

The block is a transient phenomenon and clears up in a day or two after the stopping of quinidin. Upon the return of normal rhythm in a number of cases the P-R interval was slightly prolonged. The T-wave is sometimes lowered by quinidin.

M. M. BANOWITCH.

PETERS, L. S.: **Purulent Effusions Complicating Artificial Pneumothorax.** *American Review of Tuberculosis*, September, 1921, v, No. 7, p. 599.

The authors conclusions are: (1) Purulent effusions, due only to the tubercle bacillus, are found in tuberculous pleurisies independent of artificial pneumothorax. These may be primary or secondary to a serofibrinous effusion.

(2) Many of these effusions may in the beginning show a high percentage of polymorphonuclears. Later as the effusion develops, the lymphocytes predominate.

(3) The formation of fluid in the "gas chest" is identical with the formation of fluid in the average tuberculous pleurisy, giving rise to the same symptoms, but the purulent effusion is perhaps more often noted in lung compression than elsewhere.

(4) Treatment is expectant. Removal of the fluid should be performed only when necessary to relieve pressure symptoms.

(5) The average patient with sterile pus recovers as easily and as quickly as the average patient with only a serofibrinous effusion.

(6) True empyemas must be treated by drainage and their prognosis is usually hopeless.

C. A. SCHMID.

ELLIS, A. W. M., AND CLARK, K. A. E.: **The Arrest of Auricular Fibrillation by the Use of Quinidin.** *Lancet*, October 29, 1921, cel, No. 5122, p. 894.

In 1914, Wenckebach reported the arrest of auricular fibrillation by the use of 1 gram (15.43 grains) of quinin per day. The effect was only temporary. Frey of Kiel investigated this effect and began to experiment with another alkaloid of cinchona, quinidin. He used



0.4 grain t. i. d. by mouth for from six to eight days. If cardiac failure is present, compensation should first be restored with digitalis. Patients with recent fibrillation respond best. Those refractory to digitalis do not respond to quinidin. In 42 per cent of cases fibrillation was arrested. In some of these cases there is a tendency to the formation of emboli from the contraction of an auricle which during fibrillation contains thrombi.

The authors report 7 cases with cessation of the fibrillation in 5 under quinidin treatment. Two of the cases were attended with embolic symptoms. The improvement in the general condition of the patient was not more than is usually expected under rest and digitalis.

Electrocardiographic studies have shown that the P-R interval is increased and that the excitability of the auricle is diminished. Quinidin abolishes fibrillation either by prolonging the refractory period or by increase in the conduction time.

H. JOACHIM.

GIBSON, G. A.: **Chronic Inflammatory Disease of the Spleen.** *Lancet*, October 29, 1921, cci, No. 5122, p. 885.

The spleen becomes infected as the result of a general blood infection with subsequent localization, as in syphilis and tuberculosis; by destruction of infected red blood-cells, as in malaria and Kala-azar; and lastly, by way of the gastro-intestinal tract. In the chronic inflammations in general, there is, first a hyperplasia with a subsequent reduction of the lymphoid elements. There is a deposition of fibrous tissue. In addition there is pulp stasis, hemorrhages which later give rise to pigmented scars, endothelial proliferation of sinuses sclerotic lesions of the vessels, endophlebitis of the veins, with formation of thrombi, infarction, amyloid changes, and embolism of the splenic vein producing changes in the liver. In the beginning of chronic splenitis there is hyperplasia with splenic enlargement, later fibrosis and atrophy.

Splenomegaly may give few symptoms. The first symptoms are usually a sense of fullness or pain at the site of the tumor, and anorxia. In children there may be stunted growth (Gilbert & Fournier), osseous changes, clubbed fingers, cutaneous pigmentation,

fissured tongue and epileptic attacks. In adults there may be general pigmentary changes. There is usually an anemia of the chlorotic type and a leukopenia (Kala-azar). Occasionally the picture is that of pernicious anemia. Sometimes there is a polycythemia, particularly in thrombotic phlebitis of the splenic vein. Sometimes the blood-picture changes into that of a leukemia, particularly in children. There is usually an accompanying hepatic disturbance (Banti's disease) caused probably from splenic embolism. Hematemesis may be another symptom.

Splenic inflammation may be produced by an endogenous splenic toxin, or by the action of an organism in splenic pulp. The author favors the latter possibility. Syphilis of the spleen causes an enlargement in the secondary stage and in the congenital form. It may be the chief feature in tertiary lues. A positive Wassermann is not proof that an enlarged spleen is of specific nature. The demonstration of spirochetæ postmortem or the response to treatment are necessary criteria. In congenital syphilis the spleen is affected in from 36.4 to 48.55 per cent of cases. In acquired syphilis it has been estimated at from 2 to 36 per cent. Prof. Turnbull of London Hospital has never seen a true gumma of the spleen. Coutts reports the same. In 154 autopsies on syphilitics, Hasland did not find one case of splenic gumma. In the absence of bacteriological examinations, miliary tubercles have been mistaken for gummata of the spleen. The characteristics of syphilitic splenomegaly follow:

The anemia is of the chlorotic type with a red cell-count of about 1,000,000. The blood may show evidences of pernicious anemia or leukemia. There may be jaundice, epistaxis and ascites. The Wassermann reaction at times persists even after thorough treatment.

Secondary tuberculosis of the spleen is fairly common. It occurs as a symptomless enlargement in glandular tuberculosis. Even if no tubercle bacilli can be demonstrated, such spleens are infective to guinea pigs.

*Acholuric Jaundice.*—The spleen is firm, dark red in color with no peri-splenitis. The trabeculæ show evidences of recent and old hemorrhages. There is a moderate degree of fibrosis with engorgement of the sinuses with red cells. This type of spleen is probably due to a streptothrix organism of the actinomycosis type which is pathogenic to monkeys. Splenectomy gives favorable result.

H. JOACHIM.



SWAN, J. M.: **An Analysis of Ninety Cases of Functional Disease in Soldiers.** *Archives of Internal Medicine*, November 15, 1921, xxviii, 586.

An analysis of the history, complaints, physical signs, and laboratory data in 90 soldiers suffering from functional disorders disclosed the fact that 87 per cent of them were suffering from focal infection, about 50 per cent presented signs of a disturbance of the endocrine system with small goiter, and in the opinion of Swan there was some ductless gland fault in all. A number of them had foci of infection removed, and while somewhat relieved were not cured. The author believes that some endocrine imbalance formed the basis of all of these cases of invalidism, infection and strain acting as contributory factors. Fifty of them had been in action and 40 had been wounded, gassed or both. As to treatment, he recommends a careful, understanding, history, complete clinical investigation, removal of all sources of infection, training in hygienic mode of living, and, above all, moral encouragement and support. "He should have erroneous ideas of cause and effect in regard to his complaints explained away. After that he should be encouraged to go to work and stay at work in spite of his symptoms and if encouragement fails ridicule and even sternness may be used."

T. HOWARD.

GRIFFIN, W. W.: **Acute Follicular Tonsillitis.** *Medical Record*, September 3, 1921, c, No. 10, p. 418.

The course of acute follicular tonsillitis should be divided into three stages, (1) pre-eruptive, (2) eruptive, and (3) convalescent or contractile.

*Pre-eruptive Stage.*—The toxins and pus have caused the tonsil to become inflamed and swollen, but as yet no signs of tonsillar spots are showing. During this stage there has been no drainage from the tonsil and therefore there is the greatest amount of internal absorption of toxins and this is manifested by severe constitutional symptoms.

*Eruptive Stage.*—This is the turning point of the disease. The tonsillar follicles rupture and expel their contents into the mouth,

giving the tonsil the typical white-spotted follicular appearance. In this stage if light pressure is made on the body of the tonsil the crypts will exude pus. The constitutional symptoms abate because there is good drainage.

*Contractile Stage.*—After the tonsillar crypts have discharged their purulent contents the tonsillar swelling subsides and the tonsil contracts.

The treatment depends upon the particular stage when seen.

(1) In the first stage an attempt is made to increase the elimination of toxins and promote early rupture of the follicles. To accomplish these free catharsis should be produced and diaphoresis obtained by the administration of quinin, salol, and acetphenetidin.

(2) In the second stage the main idea should be to promote drainage and to antisepticize the tonsils. For this purpose an antiseptic gargle without astrigent properties should be used, and the application of strong colloidal silver solutions to the tonsils and within the crypts.

(3) After the spots have left the tonsils an astrigent gargle is used and the best is 2 drams (7.8 grams) of tincture of chlorid of iron to the ounce (31.10 grams) of glycerin, a dram of which to a half glass of water used every two hours will rapidly bring the tonsil to normal size.

R. H. BENNETT.

FOUCAR, H. O., AND STOKES, J. H.: **The Effect of Treatment for Syphilis on Severe Anemias.** *The American Journal of the Medical Sciences*, November, 1921, clxii, No. 5, No. 596, p. 622.

Pernicious anemia, in the apparent absence of syphilis, may yield a positive Wassermann test. Primary or secondary anemia associated with latent syphilis is rare, 25 cases being found in 4,800 records in the Department of Dermatology and Syphilology in the Mayo Clinic. In syphilis with anemia, mercury should be used with caution. In 13 cases of primary anemia, 5 showed improvement under arsphenamin and 5 were made worse. Five patients out of 12 with secondary anemia improved under arsphenamin and one was made worse. Arsphenamin, then, is more effective in secondary anemia than in primary anemia. Twelve of 16 patients improved under



transfusion, 4 having failed with arsphenamin; 4 did not show improvement and 3 died. If the hemoglobin is below 20 per cent then transfusion should be preliminary to arsphenamin. Arsphenamin reactions produce an alarming drop in hemoglobin. Hemoglobin estimations alone are not sufficient to indicate the progress of the patient, as the hemoglobin may rise and the number of erythrocytes fall at the same examination. It is concluded that arsphenamin treatment is safe, if carefully used, in anemia with undoubted evidence of syphilis. Transfusion must be the ultimate resort in primary cases and in those associated with syphilis in which arsphenamin has failed.

A. T. Mays.

PELOUZE, P. S.: **The Role of the Prostate in Focal Infections.** *Medical Record*, September 3, 1921, c, No. 10, p. 412.

The frequency of toxic changes being started by a prostatic focus or kept up by one, after tooth extractions or tonsillectomy, is probably far greater than is at present realized, and is not surprising when one considers that probably 35 per cent of all men have chronic prostatitis.

*Etiology of Prostatitis.*—The greater number of these cases are postgonorrheal in the sense that the gonococcus, having once been present, has died out and the inflammatory condition has been perpetuated by secondary bacterial invasion upon a previously prepared mucosa.

A small number of cases of prostatitis with no gonorrheal history give no antecedent history that seems to enter into the etiology of prostatic infection. By far the greater number of these have had one of the infectious diseases such as pneumonia, typhoid, or influenza. A great many have had one or more attacks of tonsillitis or some dental infection to which the prostatic infection seems secondary.

*Diagnosis.*—Prostatic palpation with examination of the prostatic secretion by the microscope is always necessary. The acutely inflamed prostate should never be massaged. By massage the secretion is pressed from the prostate acini into the posterior urethra and thence into the anterior urethra. It is best to make several strokes

along the lateral prostatic lobes parallel to the course of the urethra, and, finally, passing the finger well up over the prostate in the mid-line, to bring it down with moderate pressure until it reaches the distal end of the prostatic urethra. Carried out in this way the danger of forcing pus into the seminal vesicles and thence into the epididymis is avoided. By previous sterilization of the glands the expressed secretion can be collected for culture. The fresh secretion of the prostate shows from two to six leukocytes to the one-sixth inch field.

*Bacteriology.*—The demonstration of the gonococcus in the secretion of the chronically inflamed prostate is of very rare occurrence unless there has been a recent exacerbation of the disease. The bacteria most often found are the staphylococcus, pneumococcus, diphtheroid, colon bacillus, and the streptococcus. By far the greater number of prostatic secretions show a preponderance of staphylococcus.

In many patients suffering from toxic absorption from a focus of infection in the prostate there occurs a great increase in the symptoms within twelve hours following a prostatic massage. Particularly is this true of the arthritides in which are at times produced extreme pain and a rise in temperature.

The treatment of these patients is properly performed massage at intervals of three to four days until the prostatic secretion is almost or entirely free from pus. An autogenous vaccine is a valuable adjunct to the treatment at times.

R. H. BENNETT.

KATZ, J. *Etiology and Treatment of Gastric Hyperacidity.* *Medical Record*, October 1 1921, c, No. 14, p. 591.

The causes of hyperacidity are very numerous. The most common of them are as follows:—

(1) All neurological conditions, including all neuroses and more severe types of mental disturbances. In these cases the treatment of the actual condition will relieve the hyperacidity.

(2) Visual disturbances will in the majority of cases, if prolonged, cause hyperacidity.

(3) Nasal obstructions, and mouth breathing cause dryness of



the mouth irritating the mucous membrane of the esophagus setting up hyperstimulation of the gastric mucous membrane followed by hypersecretion and hyperacidity.

(4) Defective teeth may be responsible for a good many gastric disturbances and among them hyperacidity.

(5) Hypothyroidism.

(6) Cardiac disturbances.

(7) Toxemias of every kind, and especially of the influenza type.

(8) Disturbances of the gastroenteric tract proper, as hypersecretions, ulcers, gastritis, appendicitis, colitis, enteritis, and their combinations.

(9) Gall-bladder disturbances, such as cholelithiasis and cholecystitis, will cause hyperacidity.

(10) Various nephritic disturbances and also diabetes mellitus will bring on hyperacidity.

(11) Pathological conditions of the organs of reproduction in females will often cause hyperacidity.

(12) Sexual disturbances and perversions, ungratified sexual stimuli, especially in unmarried men and women.

(13) The hyperacidity of pregnancy is well known.

(14) The quality and quantity and kinds of foods. Meats, spiced foods, smoked fish and canned foods, and highly sweetened foods will cause hyperacidity.

(15) Drugs. These are the salicylate group, phenacetin, acetanilid, etc.

(16) Tea, coffee, alcoholic beverages, tobacco, and other stimulants.

(17) Night work or keeping late hours.

(18) The eating of yeast will cause hyperacidity.

(19) Excitement of any kind will bring on high acidity.

The first thing to do in general is to remove the causative factor, if possible, then to regulate the mode of living and hygienic conditions, next the diet. The diet should be a vegetable, milk, liquid type, given at frequent intervals in small amounts. An alkaline mouth wash should be used after every meal. The bowels should be kept open with some saline laxative. Belladonna or atropin given at first in large doses until its full effect is brought about.

R. H. BENNETT.

MICHELL, J. W.: **Clinical Indications of the Etiology of Diabetes.**  
*Medical Record*, October 1, 1921, c, No. 14, p. 575.

The study was based on 116 diabetics who could give reasonably trustworthy statements concerning diseases in their grandparents, parents, uncles and aunts, cousins, nephews and nieces, and children. Also, in all instances the inquiries into possible acquired causes, particularly constitutional or local infections which might stand in etiologic relationship to the diabetes, were pursued more carefully than is customary in average history taking.

**HEREDITARY CAUSES.**—These are divided into those pertaining to the race and those pertaining to the immediate family.

(a) *Race.*—Sixty-five patients, or fifty-six per cent of the cases, were Jewish.

(b) *Family.*—The observations covered the incidence of certain associated disorders, obesity, and diabetes.

(1) *Associated Disorders.*—The proportion of complicating disorders among the 116 diabetics is higher than would be found among the population at large at corresponding ages. The most common of these complicating disorders are arteriosclerosis, hypertension or apoplexy, nephritis, tuberculosis, cardiac disease, thyroid disorders, and nervous or mental diseases.

(2) *Obesity.*—There were 111 obese relatives of the 116 diabetics, as opposed to 20 obese relatives of 112 non-diabetic patients. As the statistical method was the same in the two series and involved equal chances of error, the result confirms the view that obesity is especially associated with diabetes.

(3) *Diabetes.*—A definite history of diabetes in some member of the immediate family was obtained in 54 cases of the 116 (46.6 per cent). Owing to the multiple instances of diabetes in some families, the total number of diabetic relatives of the 116 diabetic patients was 78. There were 23 diabetic relatives of the 112 non-diabetic individuals.

**ACQUIRED CAUSES.**—The three agencies which merit principal consideration as possible acquired causes of diabetes are (a) nervous disturbances, (b) over-eating and obesity, and (c) infections.

(a) The possibility remains open that the nervous system may play some minor part as an exciting or aggravating factor in diabetes,



but with more careful study it tends to retreat more into the background.

(b) *Over-eating and Obesity*.—Sixty-nine patients (approximately 60 per cent) of this series were obese when received or gave a history of obesity.

(c) *Infections*.—Among the 116 cases of this series 51 were found with histories sufficiently suggestive to warrant tabulation.

There were 8 cases in which diabetic symptoms followed immediately upon local or general infection. Four of these were gall-bladder infections. The other four were general infections, 1 of streptococcus, the other of influenza.

There were 43 cases in which the relationship is less immediate and clear. In this series were 10 cases of liver or gall-bladder disease, and 9 cases of chronic gastro-intestinal complaints. The remainder of the 51 cases were made up of a mixture of general and local infections.

The outstanding cause of true chronic pancreatitis is syphilis.

R. H. BENNETT.

WARD, E. H. P.: *Thyroid Action and Fever*. *Medical Record*, September 3, 1921, c. No. 10, p. 399.

The thyroid secretion must neutralize adrenalin chemically or counteract it physiologically, for in its presence the adjustments effected by adrenalin are reversed. Judging from disorders due to its deficiency or excess, and from the results of its therapeutic and experimental administration in man and animals, the thyroid secretion produces the following effects. This is the active type of reaction.

*Effects Due to Neutralizing Adrenalin*.—(1) General muscular weakness, especially in the lower limbs.

(2) Pigmentation of the skin.

(3) Circulatory effects: dilatation with throbbing of the heart and blood-vessels, with lowered blood-pressure and acceleration of the pulse.

(4) Respiration is rapid and shallow.

(5) The thyroid secretion may directly stimulate the sweat-glands, the kidneys, and the gastro-intestinal mucosa, or the increase

in these secretions may possibly be accounted for by the passive or reflex influence of the hyperemia.

*Other Effects of the Thyroid Secretion.*—(1) It is supposed to exert a solvent or autolytic action on toxic substances in the tissues.

(2) It has a marked specific action in increasing the metabolic rate.

(3) Thyroid secretion in excess causes tremor in the arms and legs.

(4) Hyperthyroidism is often accompanied by wandering pains, neuralgia, etc.

(5) Prolonged hyperthyroidism in young persons generally leads to persistence of the thymus gland with hypertrophy of its lymphoid tissue and lymphocytosis.

(6) There seems to be no good evidence that the thyroid secretion ever directly produces exophthalmos.

The passive reactions in which the thyroid secretion plays a part are the following, its increased activity being usually indicated by a transient swelling or congestion of the gland providing for increased formation and absorption of the secretion:

(1) Violent or prolonged muscular effort may cause congestion of the thyroid gland, and the secretion may in this case serve two purposes.

(a) It may have a safety-valve action, relaxing the constricted blood-vessels and thus lowering the resistance against which the heart has to work.

(b) The heat dissipating action of the thyroid secretion may be called upon if the body temperature is raised above normal by violent or prolonged muscular exertion.

(2) The thyroid secretion plays a leading rôle in the passive reaction to danger, mental shocks, and physical injury in cases where these emergencies cannot be met by voluntary activity.

(a) The freeze-reaction, which may be accompanied by the conscious emotion of fright, fear or anxiety, constitutes the passive reaction to danger, and exophthalmic goiter is merely this action abnormally prolonged.

(b) *Shock.*—If a sudden danger seems very great, the victim may faint from cardiovascular inhibition or if after developing the freeze-reaction no way of escape is found and the danger seems more imminent, the splanchnic dilatation resulting from excessive thyroid



action developing gradually will cause the victim to collapse from fright.

(3) There is little difference between the effects of gross physical injury and of the chemical injury which results from the action of poisons swallowed or produced in the gastro-intestinal tract or circulating in the blood; at any rate, these latter seem to call forth the same reaction—an increased thyroid secretion, which here makes the most complete use of its many effects.

(a) In the emetic and purgative actions, which are characteristic effects of so many poisons when formed in, or introduced into the alimentary tract, while the actual movements which empty the bowel and stomach and some of the increased secretions are no doubt due to reflex action, it seems probable that an increased thyroid secretion clears the field for these reactions by neutralizing the effect of adrenalin on the gastro-intestinal tract and the splanchnic vessels.

(b) The febrile reaction is essentially a condition of more or less intense and prolonged hyperthyroidism stimulated by the thalamic center in response to the irritant action of the poisons in the blood and tissues. If the poisons are readily eliminated by the sweat-glands, kidneys, and bowel, the actual hyperthermy is not marked or prolonged; but if the toxins are too virulent to be excreted at once and paralyze or inflame the excretory organs, then the characteristic symptoms of the febrile reaction are developed in the skin, the kidneys, and the gastro-intestinal tract; and the absence of perspiration combines with vasodilatation and serous infiltration of the skin to reduce heat dissipation; and this, in conjunction with the increased combustion, produces febrile temperature. There are five reasons for supposing that the thyroid secretion is instrumental in producing the febrile reaction:

1. The thyroid gland is often congested in febrile conditions, presumably indicating increased activity.

2. The gland frequently atrophies during or after fevers, especially the acute infectious fevers, presumably from exhaustion due to over-activity.

3. Fever is a reaction to toxemia and the thyroid secretions seems to play an important part in combating toxemia, many cases of goiter and hyperthyroidism being presumably due to excessive demands on the thyroid gland made by chronic toxemia of intestinal or other origin.

4. With certain modifications due to the toxins, the characteristic features of fever and hyperthyroidism are identical.

5. The action of the thyroid is especially adapted to ridding the blood and internal organs of toxins, because in addition to whatever solvent action it may have on toxic substances, it opens up the great avenues of elimination—the kidneys, the skin, and the gastro-intestinal tract.

R. H. BENNETT.

O'CONNOR, D. C.: **Surgical Shock.** *Journal-Lancet*, May, 15 1921, xli, No. 10, p. 287.

Shock is a term including almost any sudden loss of energy from hemorrhage, physical injury, over-anesthesia, intestinal perforation, or acute onset of infection. Surgical shock results from excessive driving of the energy transforming mechanism in response to physical injury.

Symptoms are of acute anemia, low blood-pressure (often below 50 mm. of mercury), rapid (usually) soft pulse, irregular and rapid breathing (Cheyne-Stokes), weakness muscular, blunting of mind, and subnormal temperature. Prevention is accomplished by any methods which prevent stress (psychic) incident to surgical operations as well as any methods which will lessen trauma. Starvation and purgation except in intestinal cases, is overdone, and prior to operation predispose to shock. Mental condition of patient is important; before severe operations a small dose of morphin over night and before operation does much to prevent shock. Technic of operation and time consumed are important factors. Least amount of handling and traction on abdominal viscera, and quickly finishing operation are necessary to avoid shock.

*Treatment of Surgical Shock.*—(1) Prevent further shock by elimination of conditions which produce it.

(2) Support circulation.

(3) Secure physiological rest.

The first step, must check hemorrhage if a cause, remove anxiety and distress by blunting sensibilities, using morphin in adequate dosage until respirations are reduced to twelve per minute. As to other drugs, strychnin is useless and possibly dangerous, as well as



adrenalin; alcohol does nothing but harm, pituitary extract is of little avail except in intestinal paralysis, camphorated oil is well spoken of, digitalis is useful on theoretical grounds. Lowering of patient's head and raising of feet is of assistance in anemia of the brain; also introducing fluids into circulation, intravenous rectal injection, or subcutaneous infusion. Human blood transfusion into veins is best, as it nourishes heart and helps to keep up blood-pressure.

ROYSTER, L. T.: **A Statistical Report of the Incidence of Congenital Syphilis.** *American Journal of Syphilis*, January, 1921, v, 131.

A routine Wassermann was made on all children who were brought to the King's Daughters' Clinic, Norfolk, for treatment of any kind. A thousand Wassermans were taken as the basis for the calculations; of these 659 were made on colored, and 341 on white children. Of all these colored children 125 or 12.5 per cent were positives and 24 or 7.04 per cent whites were positive. Among physicians of the South there is a popular classification of negroes as regards syphilis, to wit: "Those who have or those who will have". This study has shown the incidence of syphilis among negroes to be about twice as great as among whites, certainly so far as congenital syphilis is concerned.

GAHWYLER, M.: **Non-tubercular Swelling and Calcification of the Bronchial Glands** (Ueber nicht-tuberkulose Bronchialdrüsenanschwellungen und Verkalkungen) *Schweizerische medizinische Wochenschrift*, 1921, li, No. 14, p. 317.

Accentuation of the shadow of the hilus is too frequently diagnosed as tuberculosis of the bronchial glands. Roentgen rays alone cannot furnish the pathologic explanation. That can be learned by clinical observation only. There are non-specific types of swelling and calcification. All symptoms of tuberculosis of the bronchial glands may be present, even roentgen shadows and d'Espine's sign. There are no typical x-ray findings in the tubercular process of the glands. It can only show the enlargement, not its nature. The

bronchial glands may be involved. In lung affection of various types, it presents swelling and calcification. The results of Nägele's postmortem examinations must be revised because he registered every calcified area as tubercular.

For an accurate pathological determination the tuberculin reaction, or the subcutaneous injection is indispensable, to distinguish them from similar symptom complexes of other diseases. The sum total of the clinical sign alone, and frequent examination of the bronchial glands alone, will be able to complete the diagnosis.

YOUNG, W. J.: **The Clinical Significance of the Wassermann Reaction.**  
*Kentucky Medical Journal*, April, 1921, xix, No. 4, p. 162.

In discussion Dr. Cuthbert Thompson said: "There are two things about this test I would like to refer to. During the primary stage after a syphilitic infection before the appearance of the rash the blood Wassermann is negative; then about the beginning of the eruption the reaction becomes positive, just at the time when the antibodies begin to appear. This proves to us that it is not the spirochætes that give the reaction but the antibodies. If the antibodies give the Wassermann reaction we would expect a positive Wassermann after all the spirochætes are killed for the antibodies remain in the blood for a long time after the disease has completely disappeared.

"This causes one to doubt the practice of demanding a negative Wassermann as a proof of the cure of syphilis. I would like to ask an explanation of this as I have seen a number of cases which have received a very efficient course of treatment give a positive Wassermann at the end of it".

In closing, Dr. Young said: "In regard to the Wassermann remaining four-plus after treatment, that is a point which I am glad has been mentioned, as it proves my statement that the Wassermann reaction is merely a symptom of syphilis. I would not hesitate to continue the treatment so long as the Wassermann remained four-plus. If the Wassermann remained four-plus after three series of treatments, *i. e.*, six intravenous injections of arsphenamin and fifteen of mercury salicylate extending over a period of eighteen months, I would be impelled to continue treatment rather than to say the patient was well.



"I have had the privilege of confirming about 10,000 Wassermann reports from Dr. Graves at the Louisville Public Hospital, and his laboratory findings have coincided with the clinical aspects in practically 95 per cent of cases. The laboratory and clinical findings have been in perfect accord in 100 per cent of cases of secondary lues."

GORDON, J. E.: The Gram-negative Cocci in "Colds" and Influenza. Influenza Studies. VII. *The Journal of Infectious Diseases*, November, 1921, xxix, No. 5, p. 462.

The study of this group of Gram-negative cocci, particularly *Micrococcus catarrhalis*, in their relation to the etiology of common colds and influenza, forms the basis of the work here reported. The conclusions are: Gram-negative cocci which occur in the nose and throat normally and in acute upper respiratory infections may be grouped according to cultural characteristics and fermentative differences. No essential difference was distinguished between the incidence of the various groups of Gram-negative cocci in common colds, and in a like series of normal persons. In epidemic influenza, the incidence was less than in normal persons. *Micrococcus catarrhalis*, the most common member of the group, is carried for long periods of time in the throats of many normal persons, constituting a permanent member of the normal throat flora. No distinguishable differences in virulence for mice and rabbits could be determined between strains of *Micrococcus catarrhalis* from normal sources and those from common colds or influenza. These observations do not indicate that *Micrococcus catarrhalis* is generally concerned in the pathogenesis of common colds or influenza.

M. M. BANOWITCH.

## SECTION ON LABORATORY AND RESEARCH

PETROFF, S. A., AND ORNSTEIN, G. G.: **Studies of Humoral Antibodies in Tuberculosis.** *New York State Journal of Medicine*, August, 1921, xxi, No. 8, p. 299.

Formation of antibodies is probably a metabolic function resulting from physiological hyperactivity of the cells; and it may be demonstrated where any form of protein is injected into the animal body. The formation of antibodies is a reaction to chemical substances entering the body from without. The complex substances of bacterial toxin, foreign protein, etc., incite reactions more or less specific, increasing the defences of body against the foreign substances. These antibodies have a common quality with antigens in so far as they both are colloids.

*Complement Fixation.*—When a sensitizer is brought into contact with its homologous antigen a colloidal complex takes place. This complex later on absorbs complement. The existence of this complement is proved because neither antigen nor antibodies when used separately in quantity as used in the test absorb the complement.

*Antigens.*—These are summarized in four groups: (1) Suspension of living or dead bacilli (tubercle); (2) tuberculine heated or unheated which result from the growth of the organisms in different fluid media; (3) the extract of such organisms having largely the endotoxin properties obtained either by autolysis or by chemicals; and (4) extracts of tuberculous organs. All these are colloids, and are either bacilli or derivatives from the bacilli. The protein fraction of the tubercle bacilli possesses the largest antigenic properties; the lipins, though necessary are of secondary importance.

*Technic of Preparing Glycerin Extract.*—Tubercle bacilli are cultivated on four per cent glycerin veal infusion broth for four weeks;



then the growth is removed from the broth cultures by filtering through several thicknesses of good filter paper. The residue is washed with normal salt solution until the filtrate no longer gives precipitate with tannic acid. This frees the filtrate of broth and its contained glycerin which makes the drying process difficult. The filtrate is then desiccated in vacuo over sulphuric acid for from four to six days. Five grams (77.16 grains) of dry tubercle bacilli are then pulverized in porcelain ball mills for two weeks. These mills must not revolve more than sixty revolutions per minute, and every few days they must be dismounted and shaken to remove the organisms from the corners in the jars. More than 5 grams in the mill prevents their complete pulverization.

The pulverized bacilli are then mixed with 100 c. c. of pure toluol and extracted for five days at 37.5° C. (99.5° F.), when the extract and residue combined are evaporated to dryness in the incubator with the aid of a fan. The resulting masses are returned to the porcelain ball mill and approximately 20 c. c. of 25 per cent glycerin is added. The mill containing the glycerin and tubercle bacilli is then run for forty-eight hours which results in complete trituration, when it is pipetted and transferred to a flask, the jar washed with 25 per cent glycerin and the volume made up to 500 c. c. with 25 per cent glycerin. It is then boiled slowly for an hour in a flask having a return condenser. Set aside for several hours for large clumps to settle, then transfer the supernatant turbid suspension with sterile pipette and put in small tubes, parafine and store away for use. Allow the antigen to remain in the refrigerator for a week or more as changes take place in the first week which increase its antigenic properties. The antigen is stable for at least a year. At least one-quarter of the anticomplementary dose must be used for the reaction.

BRONFENBRENNER, J., AND SCHLESINGER, M. J.: Concerning Anaphylaxis following Administration of Diphtheria Antitoxin. *Proceedings of Society of Experimental Biology and Medicine*, New York, 1920-21, xviii, 147.

Sensitiveness of human beings to horse protein is fairly widespread as indicated by numerous reports of cases of serum sickness following administration of various therapeutic sera. The imprea-

sion is, however, that in diphtheria the danger from this source is particularly slight. This comparative freedom of complications of anaphylactic nature following the administration of diphtheria antitoxin in emergency during the war has led to abandoning the preliminary skin test for sensitiveness in certain medical units.

The authors attempted to approach experimentally this question of apparent tolerance to anaphylaxis during diphtheria intoxication. They observed that sensitized guinea pigs receiving subcutaneously large excess of diphtheria toxin, withstand the intravenous injection of at least 5 lethal doses of the antigen to which they were previously sensitized. This apparent resistance appears about 12 to 14 hours after the administration of toxin and just about the time when the outward symptoms of intoxication begin to manifest themselves.

With the view of eliciting the mechanism of this phenomenon. The authors made the following observations: The antitryptic titer of the blood of guinea pigs injected with the toxin does not appreciably deviate from normal up to the time of death. The mechanism regulating the antitryptic titer of the blood remains unimpaired. In these animals, however, since an injection of antigen to which they are sensitized is followed by a typical rise of antitrypsin, this rise of antitrypsin, incidentally can be interpreted as indication that the humoral phase of the anaphylactic response of the animals is not abolished by the previous injection of toxin.

If the same dose of toxin is overneutralized with antitoxin *in vitro* before injection, it does not protect the sensitized guinea pigs from immediate death when even a single minimal lethal dose of antigen is introduced intravenously. On the contrary the same dose of toxin heated for thirty minutes at 80° C. (176° F.) protected guinea pigs from anaphylactic shock just as unheated toxin did. Heating of the toxin for thirty minutes at 100° C. (212° F.) however, destroys this property of toxin even if a larger amount of such toxin is injected.

Since the culture medium containing toxin contains also 1 per cent peptone, a control sensitized guinea pig, instead of toxin received peptone in the amount ten times that present in the culture medium carrying the toxin. This guinea pig died immediately after the intravenous injection of antigen, thus showing no protection.

It seems thus that the clinical observations concerning apparent



diminution of anaphylactic reactivity during diphtheria intoxication is born out by this preliminary experiment.

EGERER-SEHAM, GRETE, AND NIXON, C. E.: **Comparative Studies in the Chemistry of the Blood and Cerebrospinal Fluid.** *Archives of Internal Medicine*, November 15, 1921, xxviii, 561.

The results of analyses of many spinal fluids, both of normal and diseased individuals, are given in this paper, with, in many instances, comparative blood analyses. The findings are fully discussed in the light of the experience of other investigators.

The sugar content of normal spinal fluid was found to average 0.069 per cent, the maximum being 0.095 and the minimum 0.045 per cent. They found the quantity of sugar practically normal in cerebrospinal syphilis, tabes dorsalis, syphilis, hemoplegia, disseminated sclerosis, neurasthenia, brain tumor, and arteriosclerosis. A slight increase was found in hysteria and dementia paralytica and hysteria, but this increase was not sufficient to make it of value in diagnosis. Highest sugar values were found in diabetes, the maximum being 0.729 per cent. No constancy was found in the ratio between blood and spinal fluid sugar either in normal or pathological cases.

• A study of the spinal fluid creatinin in 89 cases of various diseases, excluding nephritis, gave figures varying from 0.43 to 2.75 mg. per 100 c. c., which is about the same as in the blood. Higher figures were found in diseases which tend to exhibit a high blood creatinin. The ratio of the blood to spinal fluid creatinin was inconstant.

Urea was found in an average concentration of 9.87 mg. per 100 c. c. in normal spinal fluids. There was a slight increase over the normal in cerebrospinal syphilis.

A study of the acid-base equilibrium was conducted both by the titration method and by estimating the CO<sub>2</sub> combining power by Van Slyke's method. It was found that under normal conditions the carbon dioxid carrying power of the cerebrospinal fluid is somewhat lower than that of the blood, while in some instances it is greater in the presence of acidosis. Whether or not this indicates the operation of a mechanism for the protection of the nervous system is not clear.

Of the ferments, lipase, diastase and trypsin were sought for. In only two fluids among twenty-six was the presence of any lipase even suggested. Diastase was found in all but two out of thirty. There seemed to be no relation between the amount of diastase and the amount of sugar in these specimens. Trypsin was not found in any.

The specific gravity was studied in twenty-nine fluids, normal and pathological. There was a great uniformity in the findings, the extremes being 1.0080 and 1.0088. Twelve fluids had a specific gravity of 1.0086 and this was the average for the series.

As applied to syphilis, the authors conclude that in this disease no constant deviation from normal is encountered in sugar, creatinin, or urea content, in acid-base equilibrium, in specific gravity, or in enzymatic activity.

T. HOWARD.

PEABODY, F. W., AND STURGIS, C. C.: **Clinical Studies of the Respiration. VII. The Effect of General Weakness and Fatigue on the Vital Capacity of the Lungs.** *Archives of Internal Medicine*, November 15, 1921, xxviii, 591.

Peabody and his coworkers have previously shown that the vital capacity of the lungs offers a very good index of the clinical condition of the patient in the case of heart disease. The vital capacity consists of the amount of air which a patient can exhale after a full inspiration, as measured by a spirometer. The vital capacity normally varies with several different factors, such as height, weight, sex and to some extent, age, after fifty there being normally a decrease. The most reliable standard, in the opinion of the authors, is the surface area. According to the figures obtained by West, which are accepted and used by the authors, the vital capacity is equal to 2.5 liters per square meter surface area in young men and 2.0 liters per square meter surface in young women. Variations from the normal are expressed in percentages of these figures. The object of the present paper was to determine how much, if any, general weakness and fatigue affect the vital capacity and thereby, to some extent, diminish the value of the readings in the case of heart disease complicated by these factors. They found from a study of a series of patients



who were very weak but not suffering from circulatory disorders, that the vital capacity was reduced not more than 26 per cent below the normal. In heart disease the vital capacity may be as much as 76 per cent below the normal. Furthermore, repeated tests of the vital capacity were made every fifteen seconds for ten minutes in patients with severe heart disease, but no diminution in the vital capacity ensued, in spite of the very considerable exertion entailed. The authors conclude that general muscular weakness and fatigue of the muscles of respiration are not important factors in causing the reduction of the vital capacity of the lungs in heart disease.

T. HOWARD.

RIVERS, T. M., AND KOHN, L. A.: **The Biological and the Serological Reactions of Influenza Bacilli Producing Meningitis.** *The Journal of Experimental Medicine*, November, 1921, xxxiv, No. 5, p. 477.

Thirteen strains of *Bacillus influenzae* isolated from spinal fluids of patients who died of influenza were used. Seven of these strains were obtained from the New York Department of Health. The other six were obtained from other sources.

For culture hemopeptone water was much used and made as follows:

Peptone (Fairchild's)	20 grams (308.64 grains)
Sodium Chlorid	5 grams ( 77.16 grains)
Distilled water	1,000 c. c.

This whole mixture was boiled and titrated to 7.4. 10 c. c. of washed red blood-cells were then added, the solution heated to 95° C. (203° F.), filtered through paper, and then through a Mandler filter. The material was then tubed or flased and then incubated for sterility.

For fermentation reactions the following medium was used:

Peptone (Fairchild's)	20 grams (308.64 grains).
Sodium Chlorid	5 grams ( 77.16 grains).
Agar-agar	15 grams (231.48 grains).
Distilled water	1,000 c. c.

This was boiled, titrated to 7.4, filtered and autoclaved. On removal from autoclave, while still at 95° C. (203° F.), 1 c. c. of washed red cells, 10 c. c. of a 10 per cent sugar solution and enough 25

per cent alcoholic solution of brom-cresol purple to give a good color were added. The material was then tubed and incubated for sterility.

The above media were used in both the cultural and serological studies.

Of the thirteen strains of *Bacillus influenzae* isolated from meningitic cases, eleven were alike culturally and fell into two groups by absorption and agglutination tests: seven were in Group 1, three in Group 2. One was an intermediate strain and two strains stood alone culturally and serologically.

Four blood culture strains from children with pneumonia differed from each other culturally and serologically. When these strains showed a cultural relation with the meningitic strains the serologic reactions were not confirmatory.

H. M. FEINBLATT.

EBELING, A. H., AND CARREL, A.. **Remote Results of Complete Homotransplantation of the Cornea.** *The Journal of Experimental Medicine*, November, 1921, xxxiv, No. 5, p. 435.

Experiments were performed on cats and a technic developed by Carrel in 1912 was employed. This consisted in using a large rectangular flap, fitted like the door of a safe into the edges of the corneal opening, and fixing it firmly into position by stitches.

The cats were examined and only those cats with a sterile conjunctiva were used. The eye and surrounding field was cleaned and sterilized by washing with 1-5,000 bichlorid solution. The skin of the palpebra and that surrounding were washed with alcohol just before the operation and painted with iodine. The graft was removed under other anesthesia allowing an edge of 1 mm. on the flap giving a flap of 6 x 8 mm. anteriorly and 4 x 6 posteriorly. This graft was placed upon the cornea to be resected and outlined, and then replaced in alive oil.

The outlined fragment was resected and the graft placed into position and fixed with silk vaselined sutures. No dressing was applied. A month after operation the stitches had disappeared, cicatrization was perfect and the cornea clear with its curvature apparently unaffected. The outline of the graft could not be seen. The cornea



had a normal luster, showed no opacity, was sensitive and perfectly transparent two years after the operation.

H. M. FEINBLATT.

NEVIN, M., AND BITTMAN, F. R.: **Experimental Measles in Rabbits and Monkeys.** *The Journal of Infectious Diseases*, October, 1921, xxix, No. 4, p. 429.

In a search of the literature no mention was found of attempts to transmit the virus of measles to rabbits. Six rabbits were therefore inoculated with the blood of 6 measles patients. In all 17 rabbits were inoculated, 6 with human blood and 11 with the blood of rabbits giving evidence of a reaction. All the animals inoculated with the blood of the 6 measles patients gave evidence of infection. Passage from one human case of measles was carried on through 5 rabbits, and a monkey inoculated with the blood of the fifth rabbit gave typical symptoms of measles. A monkey inoculated with pooled blood from 2 human cases of measles taken on the third day after the onset of the disease gave the characteristic symptoms of measles. Blood from cases other than measles when inoculated into rabbits failed to give evidence of infection.

M. M. BANOWITCH.

CARRELL, A.: **Cicatrizization of Wounds. XII. Factors Initiating Regeneration.** *The Journal of Experimental Medicine*, November, 1921, xxxiv, No. 5, p. 425.

It was observed that the latent period of cicatrization of a wound dressed with dead connective tissue or plasma clot was abnormally prolonged. This suggested that regeneration was not initiated directly by the loss of tissue and that, if the surfaces of the wound were effectively protected against mechanical, chemical, and bacterial irritations, the setting in motion of the process of cicatrization would be indefinitely postponed. Experiments were performed upon 5 dogs to determine the measure of delay in the onset of regeneration afforded by adequate protection of the surface of the wound.

As long as the wounds were protected by a connective tissue dress-

ing against irritations, no evidence of cicatrization was found. In two experiments there was no evidence of granulation tissue or beginning contraction of protected wounds 18 and 15 days after operation. The control wounds showed cicatrization beginning after 5 or 6 days.

Where local irritants were applied such as turpentine, chick embryo pulp, and staphylococci, the latent period was reduced to less than 2 days.

The evidence indicates that regeneration is initiated not by an internal but by an external factor.

H. M. FEINBLATT.

GORDON, J. E.: **The Relationship of the Pneumococcus to Acute Infections of the Upper Respiratory Tract in Man. Influenza Studies. VI.** *The Journal of Infectious Diseases*, November, 1921, xxix, No. 5, p. 437.

The purpose of this study was to determine first the frequency with which the pneumococcus could be demonstrated in cases of influenza and in waves of common colds, and then to compare the extent of its incidence in these conditions with its occurrence in the upper respiratory tract of normal persons.

Pneumococci are observed in various simple inflammations of the upper respiratory mucous membrane, grouped together under the general term of "common colds" somewhat more frequently than in throats which do not show lesions, although the increased percentage incidence to the particular region affected, namely, rhinitis, pharyngitis, tonsillitis or combinations of these conditions with bronchial involvement, do not show any appreciable degree of difference in the frequency with which pneumococci are encountered. It would appear, however, that the organism is somewhat more common in the infections which include involvement of the bronchi.

In patients with influenza, pneumococci are frequently encountered, but again in numbers not much greater than in normal persons, and slightly increased over the incidence in common colds. The frequent occurrence of fixed types—is chiefly of interest in comparison with the types of pneumonia found in common colds and in normal persons. While the patient with the average common cold



or influenza will only show the presence of the pneumococcus in somewhat greater frequency than the ratio of 1:3, nevertheless outbreaks of respiratory infections may occur in which this particular coccus is involved in practically all cases.

By observing the bacteriological changes evidenced in oncoming colds, it was found that in certain instances pneumococci appear in the throat practically at the same time that developing symptoms are observed. Since there is no exact knowledge of the period of incubation in common colds, one can merely conjecture as to the significance of the pneumococci present. If common colds present the relatively short incubation period of influenza then it would seem that in some cases this organism may be the direct causative factor. In other instances, the presence of the pneumococcus in the inflamed area was demonstrated relatively late in the course of the infection. It would seem to be present in such cases as a secondary invader.

Serologic studies of pneumococci, involving type determinations of the organisms from pathologic throats and a more careful study of the predominating group, Type 4, give evidence that no one variety of pneumococcus is concerned in those cases in which the organism is present in one capacity or another.

Interesting information is furnished by the study of the relative virulence of pneumococci from various respiratory infections and from normal sources in respect to their relationship to disease. The serologic study of various strains obtained from those cases in which pneumococci were found led to the definite conclusion that no common etiology can be proved, for the strains vary decidedly in biologic properties. What then is the province of the pneumococcus in these infections, or has it no significance? Some light is cast on the problem by the virulence studies. Pneumococci from cold sources are surely more virulent for mice than are like cultures derived from normal persons. In other epidemics, such as influenza, it shows a still more heightened virulence.

Granting the fact that the pneumococci may only play a primary etiologic rôle in a small percentage of cases, still it would seem that it may rather commonly be a secondary invader, or, if present normally in the throat in numbers too small for detection, may increase rapidly in numbers and under the stimulus of the conditions generated by the inflammation, or a symbiosis with the infecting virus, acquire an increased virulence. It seems probable that in a consider-

able percentage of upper respiratory infections the pneumococcus is in reality pathogenic and exercises a real influence on the course of the infection.

M. M. BANOWITCH.

CARREL, A.: **Remote Results of Operation on the Pulmonary Orifice of the Heart.** *The Journal of Experimental Medicine*, November, 1921, xxxiv, No. 5, p. 441.

Experiments were made in 1912 to develop a technic by which the size of the pulmonary orifice of the heart could be increased or decreased. With a proper procedure these experiments showed little danger to the life of the animal.

Of the animals experimented upon 8 died in from 1 to 6 years after operation from undetermined diseases or from pneumonia. Two were still alive after 7 years.

In the first experiments, extensive pleural and pericardial lesions were observed after patching of the pulmonary artery. These adhesions were less marked later as greater care was observed in protecting the endothelial surfaces by packing with cotton and fine Japanese silk.

The arterial wall showed excellent cicatrization of the grafted flap, its outline could be determined only after very careful search. Where the orifice was patched a slight dilatation could be observed with no probable leakage as no diastolic murmur was elicited 6 months after operation.

H. M. FEINBLATT.

ECKER, E. E.: **Comparison of Formol and Wassermann Reactions in Diagnosis of Syphilis.** *The Journal of Infectious Diseases*, October, 1921, xxix, No. 4, p. 359.

Recently Gaté and Papacostas reported that small quantities of formalin added to pooled syphilitic serum led to coagulation, while no such action took place if the serums were from nonsyphilitic patients. They found in 400 tests 85 per cent agreement in the two reactions. The author applied this reaction to 500 comparative



tests and his conclusions are: of the total number of positive reactions obtained by the formol, only 37.09 per cent agreed with the positive results obtained by the Wassermann method. A large number of formol positives (44, or 8.8 per cent of total) were of the + type and of these 13 were positive by the Wassermann method. These weakly positive reactions tend to induce confusion, as it is often difficult to interpret these reactions. The reaction as it stands is of no diagnostic value because of its failure to react in clinically and serologically clear-cut cases of syphilis, and the occurrence of positive reaction in the absence of the disease.

M. M. BANOWITCH.

GAY, J. N.: **An Experimental Study of Saline and Lipoid Typhoid Vaccines in Respect to Antigenic and Immunizing Value.** *The Journal of Infectious Diseases*, October, 1921, xxix, No. 4, p. 417.

The author's plan was to compare the agglutinin production in rabbits immunized with typhoid lipovaccine and saline vaccine respectively, and to test the degree of protection afforded against the typhoid carrier state in rabbits. Her conclusions are: The antigenic properties of typhoid lipovaccine in rabbits are not equal to those of saline vaccine. No agglutinins or fixation antibodies appear in the serums of those vaccinated with lipovaccine, while in those vaccinated with saline vaccine the mean agglutinin titer is 1:160. Animals vaccinated with lipovaccine, whose serums show no agglutinin content, are nearly as well protected against becoming carriers as those vaccinated with saline vaccine whose serums show high agglutinin content. Even in the latter animals, the agglutinin content varies in degree inversely with the protection afforded. Therefore the agglutinin titer is certainly not a measure of protection.

M. M. BANOWITCH.

KELTY, R. A.: **Heredity as an Element in Bacterial Diseases.** *Pennsylvania Medical Journal*, June, 1921, xxiv, No. 9, p. 609.

The author goes over the literature in regard to the factor heredity plays in syphilis; the disease is carried on in the offspring either

by one or both parents in the germ cell or it is acquired from the mother intrauterine. He believes the father cannot transmit any bacterial disease through the germ cell, the mother having a given disease may transmit it through the ovum. Tuberculosis cannot be transmitted directly by male, because the tubercle bacilli cannot be carried over by the spermatozoön; it is not likely to be transmitted by the ovum for the same reasons. Tuberculosis will develop in the fetus acquired from fecal uterine or by way of a blood infection—both are exceptional; disease itself is not a continual bacteremia.

In the case of the author, a mother with active tuberculosis gave birth to an apparently healthy child. The mother died three weeks later; tuberculosis was confirmed by autopsy, and by presence of tubercle bacilli in smear of placental blood. The child died shortly after mother, and tubercle bacilli were demonstrated in its heart's blood, though there were no demonstrable lesions at autopsy.

The vast majority of acquired tuberculosis in small children is acquired by nursing from tuberculous mother. The transmission of a disease and its subsequent developments and progressions in the fetus must depend upon the presence of disease in an active state in the female and is therefore an acquired intrauterine infection and not hereditary in origin.

Natural selection is very important; acquired characteristics are incorporated in the offspring as result of environmental influence.

**RABINOWITCH, I. M.: The Prognostic Value of the Study of the Blood Creatinin in Nephritis.** *Canadian Medical Association Journal*, 1921, xi, 320.

In nephritis the blood creatinin furnishes a more reliable prognosis than any other test we have. Creatinin values from 2.5 to 3.0 mg. per 100 c. c. may be viewed with suspicion; figures from 3 to 5 mg. (.0462 to .077 grain) may be regarded as decidedly unfavorable, while over 5 mg. probably indicates an early termination. To judge the prognosis, however, by the creatinin, it becomes essential to correlate the clinical picture, and differentiate between (generally speaking) two types of retention, (a) one in which there is a gradual increase in the various non-protein nitrogenous elements of the blood, that is, an increase, first of uric acid, then of urea, and



lastly of creatinin, as is seen in gradual degenerative changes in the kidney, such as occurs in chronic nephritis, and (b) a sudden complete retention of all products as may occur in an acute toxic nephritis, e. g., bichlorid poisoning, or in cases, where there is a mechanical obstruction to the urinary outflow.

In the series of 14 cases tabulated, Case 1, is of bichlorid poisoning and is regarded as the "sudden retention" type. The patient's age was 26, duration of illness 9 days until death; there were 12 mg. creatinin per 100 c. c. blood; urea N 137; 0.6 per cent phenol-sulphonephthalein in 2 hours.

THEIS, R. C., AND BENEDICT, S. R.: **Distribution of Uric Acid in the Blood.** *The Journal of Laboratory and Clinical Medicine*, September, 1921, vi, No. 12, p. 680.

Uric acid was determined in plasma and corpuscles in 104 cases, 51 of which showed equal distribution, 45 showed plasma uric acid greater than corpuscle uric acid, and 8 showed a greater amount of uric acid in the corpuscles than the plasma.

This relationship holds whether the blood is oxalated or defibrinated and does not depend upon the pathologic condition.

Added uric acid did not penetrate the corpuscles in 70 per cent of 30 bloods studied. In 30 per cent of the cases the added uric acid was equally distributed between corpuscles and plasma.

The marked difference in permeability of the corpuscles of certain bloods for added uric acid is of interest, and suggests that other cells in the body may show similar differences in permeability. Such findings may tend to throw light on the questions involved in specific uric acid retention in the organism.

C. M. ANDERSON.

## SECTION ON PEDIATRICS

HANNAH, L.: **Acute Anterior Poliomyelitis of an Unusual Type.** *Medical Record*, August 27, 1921, c, No. 9, p. 364.

There are many features of resemblance between acute anterior poliomyelitis and polioencephalitis, many believing they are but different phases of one and the same thing. In every epidemic of size there are cases of polioencephalitis with resulting spastic hemiplegia, the superior and inferior types of Wernicke, facial paralysis, bulbar paralysis, paralysis of the neck muscles and paralysis of the various muscles of the trunk. Rarely, there are cases of the Landry ascending type of paralysis.

In regard to the etiology of sporadic cases, it has not been proved that the causative agent is the same as that of the epidemic form. However, it is scarcely possible that the serum employed in epidemic poliomyelitis is adapted to the treatment of the sporadic form. Starr has suggested that the cause of these sporadic forms may be primary degeneration of the ganglion cells, or a hemorrhage or thrombosis of the spinal vessel. The same sex, age of maximum liability, and seasonal conditions obtain in the sporadic as well as in the epidemic form.

CASE.—Boy, 6 years old, with negative family history, except that one brother now 8 years old has slight “weakness” of one side of the body, including the limbs, from which he has suffered since birth.

*Present History.*—Three days previous a left partial hemiplegia appeared suddenly; paralysis was flaccid with right internal strabismus, symptoms of optic neuritis, impaired vision, and slight temporary hemianopsia; pupil reaction normal, also equal. Deep reflexes were normal as well as tactile sensation; slight motor paralysis of the tongue, right-sided; malaise and atrophy were noted. The



only prodromal symptoms occurred three days before the attack, when the patient complained of slight abdominal colic.

Later examinations showed progressive disability; as at first he was able to walk; he later became confined to bed and practically helpless, showing motor aphasia and dysphagia. Some retention of urine and abolition of the left patellar wrist, ankle and plantar reflexes; also marked Kernig's sign and slight Babinski reflex. Upper limb paralysis was with lower arm type, with great disability, there being total loss of control of the forearm. No mental impairment, no headaches, no fever or loss of consciousness, convulsions, tremor, nor chills at any time.

The Moro test for tuberculosis was negative; blood-pressure 85; hemoglobin 70 per cent; leukocytes 7,600; Widal and Wassermann tests both negative; urine normal.

*Treatment.*—Symptomatic with use of hydrotherapy, electrotherapy, and mechanotherapy, with massage. The incidence of hemiplegia in sporadic poliomyelitis, reported by observers from 1864 to 1908, was less than 5 per cent (63 out of 1292 cases).

KAHN, W.: *Tolerance of Grape Sugar in Children.* *Jahrbuch fuer Kinderheilkunde*, Berlin, 1921, xciv, 15.

Kahn gave children from 100 to 150 c. c. of a 20 per cent solution of grape sugar, fasting or in the evening, and infants 160 c. c. in place of the last feeding of the day. He found that the infants displayed great tolerance for grape sugar. The lowest thresholds were between 6.7 and 11.1 gram per kilogram (2.71 lbs.); the highest between 13.5 and 17.5. At the age of one and half years the limit of assimilation drops. In older children the average is only 3.5 grams per kilogram.

COMBY, J.: *General Review—Curable Idiocy Due to Parathyroid Deficiency.* *Archives de Medicine des Enfants*, Paris, May, 1921, xxiv, 303-307.

Authors disagree on the question of hemorrhage into the parathyroid gland as the cause of tetany. The administration of parathy-

roid gland does not cure tetany. G. H. Clark has however described a new variety of parathyroid deficiency (*Glasgow Med. Jour.*, Oct., 1920). Two infants presented the following picture:—idiocy, depression, fibrillary spasms of the muscles, convulsions and loss of equilibrium. The electrical reactions were not characteristic of tetany and the Chvostek and Trousseau signs were absent. One of these patients was cured in three weeks by the ingestion twice a day of 0.03 gram ( $\frac{1}{2}$  grain) of tablets containing dried thyroid and parathyroid glands. The other child was cured in nine days by the administration three times a day of 0.006 grams ( $\frac{1}{10}$  grain) of parathyroid gland alone. The condition returned when parathyroid therapy was stopped but disappeared again on its resumption. Giving thyroid gland alone had no effect. In animals, Noel Paton has demonstrated (*Quart. Jour. Exper. Physiol.*, 1916) a similar state after extirpation of the parathyroid glands.

W. C. DAVISON.

WEILL, E., AND DUFOURT, A.: **General Considerations on the Etiology and Pathogenesis of the Anemias of Infancy.** *Archives de Médecine des Enfants*, Paris, May, 1921, xxiv, 265-288.

There may be many nucleated red blood corpuscles in the blood in mild anemia in infants under the age of five months but in older children this occurs only in severe anemia. Anemias in children may be classified etiologically and pathogenically. Although leukemia may be congenital there is no evidence of an hereditary basis. Anemias are most common between the ages of 1 and 2 years. Syphilis is blamed for half of the anemias of childhood regardless of whether the type is pernicious anemia, splenic anemia without leukocytosis, von Jacksch-Luzet type with leukocytosis, etc. Tuberculosis and bacterial infections are frequently the causes of anemia though not as commonly as lues. Leishmaniosis may produce a fatal anemia in which the mononuclear cells predominate. Intestinal parasites may cause an anemia with eosinophilia, usually in children over three years. The diet is at fault in simple anemias with a low hemoglobin percentage and in prescorbutic anemia. Digestive disturbances, congenital debility, neoplasms, bad hygiene and hemorrhages are also responsible for anemia. Rickets is frequently associated with ane-



mia and is probably due to the same cause. It is usually difficult to differentiate until late in the disease between anemia, true leukemia and pseudoleukemia. Pathogenically anemias may be divided into hemoglobin (chlorosis and iron deficiency) and corpuscular types. The latter may be further subdivided into those produced by destruction of the blood-cells, *i. e.*, possibly due to hemolysins in syphilis, tuberculosis and bacterial infections, to increased fragility of the cells in malaria and leishmaniosis and to absorbed toxins in digestive disturbances; and into those due to failure of the hemopoetic system (in adults this leads to aplastic anemia but in children it results in leukemia). To this classification may be added the anemias due to a diminution in the quantity of blood, *i. e.*, hemorrhages, etc.

W. C. DAVISON.

KERLEY, C. G.: *The Recognition and Correction of Enteroptosis in Children.* *Medical Record*, October 1, 1921, c, No. 14, p. 584.

*The Ptosed Stomach.*—In all cases ptosed stomach may be explained by the overload, and this overloading takes place during the first three years of life. The frequent feeding of from 8 to 9 ounces in the bottle seems to be an etiologic feature. Another and probably more important error is the custom of forcing large quantities of milk after a solid food diet.

*Ptosis of the Colon.*—A complete ptosis has always been associated with a ptosed stomach. The enteroptosis patient suffers from maldevelopment because of insufficient food intake, and this depends upon the following chain of circumstances, namely: poor appetite, food residue, abnormal relations of the pylorus to the stomach, and hypomotility. The symptom complex enteroptosis in children is an habitually poor appetite, recurrent vomiting, nausea without vomiting, eructations of gas and constipation.

*Management.*—The first step is to secure proper mechanical support. An abdominal belt with a projecting ridge for those in whom the stomach alone is ptosed is fitted to the patient. The ridge is arranged so the pressure is exerted against the lower portion of the stomach. In those in whom the stomach and intestine are involved, a large thick pad is fashioned and attached to the inner surface of the belt. This support is worn constantly when awake.

*Rest in a Recumbent Position.*—The carrying requirements of the stomach are lessened and the emptying of the stomach is facilitated by having the child rest in a recumbent position (on the right side, if possible) for an hour after a meal and only solids are given at meal time. Fluids are given at a period equally distant between meals.

*Constipation.*—A constipation diet schedule is given the patient. Laxative doses of aromatic cascara are given three times daily in sufficient quantities to produce evacuation. Daily massage by a skilled operator is employed if possible.

R. H. BENNETT.

LOSEE, J. R.: **Hemorrhages in the New-born.** *Medical Record*, September 24, 1921, c, No. 13, p. 541.

There is no definite etiology for the spontaneous hemorrhages of the new-born, but both this type and in the traumatic type bleeding persists because the blood system is not complete at birth. The addition of normal adult blood is rational therapeutics because it supplies the substances that are necessary to promote clotting.

The blood of both the infant and donor must be examined for isoagglutination before transfusion, with the same precision that is customary in transfusing an adult.

Sixteen cases of serious hemorrhage have been reported from the New York Lying-In Hospital with one death, and whereas in a large series of cases there would still be a definite mortality, the former percentage of deaths has been greatly reduced by the intravenous administration of whole blood.

R. H. BENNETT.

MILLER, R.: **On Celiac Disease and Allied Types of Infantilism: A Retrospect and Bibliography.** *British Journal of Childrens Diseases*, 1921, xviii, 11.

There is considerable difficulty in tracing past writings on celiac disease because of the various names under which the condition has been described.



Samuel Gee was the first one (1888) to publish an article on this condition. He gave an extraordinarily vivid description of the celiac child as we know it to-day. He did not attempt any explanation of the origin of the malady beyond attributing it to a digestive fault. Although he attributed the pallor of the stools to a deficiency of bile, he did not recognize that the chief failure of digestion was that of fat.

Cheadle in a paper "On Acholia" in 1903 was the first to recognize the excess of fat in the stools; he demonstrated the analogy between transient and protracted cases and also laid emphasis upon the disturbed function of the liver. Bramwell in 1902 first showed his case of infantilism which he regarded as of pancreatic origin.

Herter in 1908 published a detailed account of persistent fatty diarrhea with infantilism. Prior to this, celiac disease had been recognized as primarily a digestive fault particularly affecting fat indigestion but Herter attributed it to a failure in fat absorption due to inflammatory disease of the intestine; the enteritis he in turn attributed to a persistence and overgrowth of intestinal flora of the nursling period, notably *Bacillus bifidus*. This view has not been generally accepted.

If it is agreed that the cases described by Herter were instances of celiac disease then, if Herter's assumption of the intestinal origin of the malady can be proved, "intestinal infantilism" is a correct name for celiac disease, but if his view cannot be proved, it is better to keep to the non-committal terms of celiac disease and celiac infantilism. In Miller's opinion, Herter's views are wrong. He thinks that there may be cases of "intestinal infantilism", not Herter's and not celiac disease, but due to a chronic diarrhea which may produce disturbances of growth. Miller contributes a case of celiac disease in which no chronic changes were found in the intestines, pancreas or liver and because of this feels that celiac disease is independent of causative structural changes.

M. B. GORDON.

FREIRE, DE C. L.: A Case of Osteitis Fibrosa Deformans. *Archives de Medicine des Enfants*, Paris, May, 1921, xxiv, 289-296.

The disease commenced in this patient at the age of 18 months, with fragility of the bones of the lower limbs, which underwent a

series of fractures after slight traumatisms. At the age of sixteen years this patient was described by Professor Salazar de Sousa in this Journal (1910, No. 12). At that time he presented a typical picture of osteitis fibrosa deformans with multiple deformities of the trunk and lower limbs and a very marked hypertrophy of the bones of the cranium and face. The arms were scarcely affected. During the next six years the lesions of the trunk and legs remained stationary, though muscular weakness has confined that patient to bed. The hypertrophy of the skull became more pronounced giving an appearance of osseous leontiasis. The opinion is expressed that osseous leontiasis of adolescents and osteitis fibrosa deformans of adults are the same disease.

W. C. DAVISON.

VARIOT, G., AND WALTER, H.: **Double Congenital Hydronephrosis in an Infant of Three and One-half Months.** *Archives de Medicine des Enfants*, Paris, May, 1921, xxiv, 297-302.

This baby who died at the age of three and one-half months had double congenital hydronephrosis. The principal feature was the swelling of the abdomen which began at the age of one month. Two liters (4.2266 pints) of fluid were withdrawn by puncture through the abdominal wall. Death was probably due to uremia. The autopsy showed that the left kidney was much the larger. Stenosis of the ureters was evidently responsible for the hydronephrosis in this case as well as in others reported in the literature.

W. C. DAVISON.

VERAS, S.: **Malaria in Children at Smyrna.** *British Journal of Children's Diseases*, 1921, xviii, 1.

Before the war, 3 per cent of children were suffering from malaria, even though that disease is widely spread throughout Asia Minor. During the last few years since the war, malaria has spread among children to such an extent that from January to December, 1920, 11 per cent of all the children examined by him were found to be suffering from malaria. The largest proportion were between



the ages of 1 and 2 years. There were 2 between 1 and 6 months of age, 6 between 6 and 12 months old. The types encountered were mostly of the quotidian form, few of the tertian and none of the quartan. Out of his series of 88 cases, 68 were chronic.

The febrile paroxysm was sometimes represented by an attack of tonic-clonic convulsions. Other nervous disturbances which he noticed were restlessness, some suggestions of meningitis and psychopathic phenomena. The latter were sometimes manifested by hallucinations and incoherent talking. He also encountered alimentary disturbances, especially if the malarial attack was preceded by an enteritis, in which event the enteritis was aggravated and generally resulted in marasmus and anemia. Other alimentary disturbances observed were meteorism, while in other cases, the abdominal wall became sunken and tender on palpation, especially in the right hypochondrium and epigastrium.

The spleen was not always enlarged but sometimes the size attained was so enormous that the ligament gave way and the spleen would sink in the abdomen. Invariably there was some enlargement of the liver at the onset, especially so in primary infections. This would explain why young children remain so profoundly anemic even after clinical recovery from malaria.

He did not observe any pulmonary complications which could be attributed to the malaria but he sometimes found that an acute affection of the respiratory system might arouse a latent malarial process into activity.

There were no special complications noticed in the cardiovascular system. Occasionally a slight albuminuria or a phosphaturia would arise. He saw only 1 case of hemoglobinuria prior to the war but since then 2 others. Because of the results in the treatment of a few cases, he feels that quinin produces hemolysis in children.

He found that children tolerate quinin better than adults. He advises that to obtain good results, the first dose be given at the end of the febrile attack and the next dose three to four hours before the commencement of the following attack. It is advisable to continue treatment with quinin during apyrexial intervals between attacks. He administered the quinin by mouth in the form of several salts such as aristochin, the neutral carbonate and euquinin. He never used the intravenous method.

M. B. GORDON.

MCCULLOCH, H., AND RUPE, W. A.: **Studies on the Dosage of Digitalis in Children.** *The American Journal of Medical Sciences*, August, 1921, clxii, No. 2, No. 593, p. 231.

Children between the weight of 8 and 20 kilos (21.68 to 54.20 lbs.), or up to the approximate age of four years, respond more readily to digitalis than do children above this weight and age. Older children with normal hearts require a larger amount per unit of body weight than is necessary to produce an effect in adults with heart disease. Vomiting is one of the earliest signs of the effect of digitalis administration, occurring before the detection by the electrocardiogram. Changes in the electrocardiogram were not constantly found in all cases studied, in which a digitalis effect was obtained. The most common change on the tracing was that of a sinus arrhythmia. The T-wave became altered in size and direction in a few of the cases.

A. T. MAYS.

MILLER, M. K., AND LYON, M. W.: **Case of Meningitis in an Infant Due to a Thread-like Diphtheroid Organism.** *The American Journal of Medical Sciences*, October, 1921, No. 4, No. 595, p. 593.

The patient was eighteen months old and had a purulent meningitis complicating a bronchopneumonia. A diphtheroid microorganism named *Corynebacterium trichodiphtheroide* was isolated from the spinal fluid. It appeared as a small bacillus, grew into irregular thread-like forms on first culturing, later becoming bacillary with Gram-positive polar bodies and segments of diphtheroid type. It was not pathogenic for rabbits or caviae.

A. T. MAYS.

LOZANO, A. R.: **Meningococcus Infections in Infancy.** *Archives Espanoles de Pediatria*, March, 1921, v, 129.

Lozano reports 14 cases of meningococcic infection, and from his own experience and from a study of the literature, he draws the two following conclusions:



First, it must be admitted that the meningococcus, leaving the rhinopharynx, first invades the blood stream, producing a septicemia; in the majority of cases, the microorganism early localizes itself in the meninges, frequently, however, still persisting in the blood, or fixing itself in various parts of the body. These parts are the joints, the lungs, the kidneys, or the parameningeal tissues, and they, in turn, may serve as new foci of blood stream infection. In other cases, the infection remained a pure septicemia, or one with extrameningeal localizations, or after the lapse of some time may produce the meningeal "explosion".

The second conclusion, of great practical interest, is a consequence of the first, and comprises two points. The first of these points refers to the necessity of bearing in mind the existence of meningococcic septicemic states without meningitis, and the importance of their early diagnosis, so that treatment may be instituted before the production of the important localizations (most frequently meningeal). The second point relates to the modifications of treatment which this new pathologic concept implies.

The treatment of meningococcus meningitis, until quite recently, consisted in the intraspinal administration of the antimeningococcus serum. Latterly, the idea of Lewkowicz as to the important early involvement of the ventricles has modified the technic so as to cause the employment of injections of serum into both ventricles in young infants, either alone or combined with the intraspinal route.

Autogenous vaccines have been used subcutaneously by MacKenzie, Caronia, Lewkowicz and others, and intravenously by Randoni, Di Cristina, Sindoni and others, usually in conjunction with serumtherapy. Finally intraspinal autoserumtherapy has been successfully employed by Capogrossi.

Lozano's own procedure is to do a lumbar puncture in suspected cases, and, if the serum is turbid, to at once introduce a polyvalent antimeningococcic serum. He advises relatively large doses, 20 c. c. (5.42 fluidrams) as a minimum in the small infant, and 30, 40, or even 50 c. c., in the older children. These injections are repeated daily for four or five days, with a daily injection of 10 c. c. intramuscularly. When this method is not successful he either changes the strain of serum or gives an autogenous vaccine in doses of 100 millions to begin, every 4th day doubling the dose at each injection.

W. H. DONNELLY.

## SECTION ON ROENTGENOLOGY AND ELECTRO- THERAPEUTICS

UPSON, W. O.: **Transposed Viscera.** *American Journal of Roentgenology*, 1921, viii, 385.

Probably no other malformation will cause such marked deviation from the expected findings in diseases of the thoracic and abdominal viscera and yet the subject has received but slight attention.

Prior to 1902 the greatest number of cases were discovered on the operating table or at necropsy.

A case was reported by Arneille of a man, 50 years of age, examined 5 times for life insurance and yet the complete transposition of his viscera had not been detected. Thieray reported a case in which an operation was performed for appendicitis and the surgeon found he was dealing with the descending colon. A subsequent barium meal revealed the fact that the cecum and appendix were in the left iliac fossa, and the case was one of complete situs inversus.

One of the earliest authentic cases was recorded by Petrus Severinus of Rome in 1643.

In 1865 Gruber made a collection of 79 cases, 5 or 6 of which were discovered during life. In 71 cases both the heart and abdominal organs were displaced and the remaining 8 showed displacement of the abdominal organs only.

Kuchenmeister in 1893, increased the number of known cases to 249; in 1895 the total was brought up to 190.

The development of the x-ray has facilitated the discovery of this condition in the living subject and the number of citable cases has multiplied, the first one discovered by this means was reported in 1897.

Bland Sutton reported discovery of only one case in the course of 3000 abdominal sections.



Reid, in 1836 reported a case of colic and abdominal pain, terminating fatally in which cause of death was given as "ileus". At the autopsy the colon was found to be entirely on the left side, with the cecum in the left iliac fossa, small intestines were pushed well to right. This is apparently the first case of non-rotation of the colon to be reported. Dextro-cardia may be found with the abdominal viscera in the normal position, or the abdominal organs may be transposed while thorax is perfectly normal.

Dr. Henry K. Pancoast reports 3 cases, in which the heart as well as the abdominal organs were transposed.

Adami believes the most likely explanation is that the main current of the blood to and from the germinal area becomes diverted at an early age of existence and thus purely mechanical influences cause the vessels on one side of the organism to receive more blood and therefore to grow more vigorously than those of the other side. Karashima propounds the theory that trauma in late embryonic life might cause the malformation.

Another theory is expressed by the term "cryptoplasmic variation", in which it is suggested that in the germ-cell there is predilection after the ultimate form of the body, which may induce this abnormality.

In discussion Dr. E. S. Blaine said: "I have observed several cases of situs inversus but every one of these was a complete reversal of the position of both the thoracic and abdominal organs".

**WIDERÖE, S.: The Diagnostic Meaning of Intraspinal Injections of Air in Spinal Troubles Especially Tumors** (Ueber die diagnostische Bedeutung der intraspinalen Luftinjektionen bei Rückenmarksleiden, besonders bei Geschwalsten). *Zeutralblatt fuer Chirurgie*, 1921, xlviii, No. 12, pp. 395-397.

Walter Dandy of Baltimore was the first to use intraspinal injection of air. He employed these injections in 8 cases of different brain diseases, so to be able to localize them. He was able to demonstrate the air under the tumor, in which the author has not succeeded in doing in his x-ray plates. Dandy observed after intraspinal injections of air only headaches and occasionally vomiting. The author used intraspinal air injections in 11 cases of dif-

ferent diseases of the central nervous system. According to the symptoms called forth by the procedure, the cases can be separated into four groups. In 4 cases which presented every pathological anatomical change of a hydrocephalic nature no symptoms resulted. In 4 cases there were cerebral symptoms—roaring in the ears and headache. The diagnosis was syphilitic brain disease. In the third group there were 2 patients who showed spinal cord symptoms during the injection of air. In one patient (with a diagnosis of general paralysis) there were traces of radiating pains in the lower extremities shortly after each injection of air. These pains began in the crux and rose to the upper extremities and the neck; these symptoms were only felt after the injection of 3 c. c., not after 1 to 2 c. c. of air. In the fourth group was one patient (spinal cord tumor) who suffered pains in attacks some hours after the injection.

PRICE, B. S.: **Treatment of Adenoids and Tonsils by X-ray vs Surgery.** *American Journal of Electrotherapy and Radiology*, 1921, xxxix, 81-83.

The intentional treatment of adenoids and diseased tonsils is a relatively new method. In the raying of patients for cervical adenitis, coincidentally diseased tonsils and adenoids were cured at the same time.

Since the author made this discovery, he has treated 23 cases of diseased tonsils of varying ages and of whom 14 had accompanying adenoids, with the result that in every case the adenoids have practically disappeared and the tonsils have assumed the appearance of health and seem capable of functioning normally. The improvement is progressive and there is no evidence of tendency to recur. Greatly hypertrophied tonsils with deep ragged crypts and with peritonsillar adhesions or extensive infective processes appear to be no exception to this rule, though they usually require an additional treatment over those given the more moderate cases.

Further there has been a striking reduction in the symptoms of toxic absorption when present. The technic is as follows: The patient lies on one side during half of the treatment and on the other side during the remaining half. This directing of the ray from both sides is for the purpose of more certainty of including every



portion of diseased tissue within the field of treatment and for the further protection of the skin. The patient is comfortably placed with the side of the face flat on the pillow so that a line through both tonsils is parallel with the line of direction of the ray. In the case of adenoids alone, or where they are extreme, that ray under higher penetration is also directed from the post-cervical region directly through to the adenoids, in all cases protecting the hair. The dosage used for the average adult with a Coolidge tube adjusted to a seven-inch spark gap is four milliamperes of current through the tube at a distance of twelve inches from anode to skin, with seven minutes exposure on each side. The ray is filtered through 4 mm. of aluminum. A heavy lead cylinder, three inches in diameter, attached to the tube stand, allows sufficient area of radiation and also protects the surrounding tissues.

The pituitary and thyroid gland may usually thus be avoided. Two weeks following the first treatment a second of the same strength is given. A period of three weeks then elapses, when a third similar or shorter treatment is given, providing progress of improvement is not sufficient to warrant a longer wait. About two months following the first treatment, large tonsils usually approach normal in size and general appearance, except where they were originally scirrhus and very rugged. Even densely fibrous and badly infected tonsils gradually recover, the crypts emptying their contents by the atrophying contraction of the glandular tissue.

With roentgen treatment a functioning tonsillar tissue is preserved intact; the adenoidal, tonsillar, infratonsillar and all immediately surrounding tissues are disinfected and do not tend to take on infection readily. Roentgenotherapy immediately decreases and guards against infective absorption. There is no danger in the proper use of roentgenotherapy, no anesthetic, no asphyxia, no pneumonia, no hemorrhage, no sepsis. There is always an element of possible danger with surgical treatment.

While the number of cases upon which this report is based is entirely too small for final conclusions, it suggests a safer and more efficient method of treatment for adenoids and diseased tonsils than surgical treatment. The evidence as shown by all cases obtainable of those incidentally treated during the past 12 years, intimate a reasonable degree of permanency in the results.

WITHERBEE, W. D.: **X-Ray Treatment of Tonsils and Adenoids.**  
*American Journal of Roentgenology*, 1921, viii, 25-30.

In Dec., 1919 the author treated the first case of hypertrophied tonsils. This case, although carefully examined, revealed no changes in the surface, size or outline of the tonsil until the fifth week following treatment. The first evidence of the effect of x-ray was a smoothing out of the tonsillar mucous membrane, which very soon resulted in a glazed and somewhat pale surface. This was followed by a rather rapid decrease in size, which in this case was most apparent in the left tonsil. At the end of eight weeks the left tonsil was seemingly reduced one-half and the right one-third. About this time a dose similar to the first was given. Since then, and up to the present time, the patient has had no further trouble and the tonsils are apparently now about one-fourth the original size.

In the experimental series of 60 cases, treated at the Rockefeller Institute for Medical Research, the following factors were used with 3 mm. of aluminum; 8-inch spark gap, 5 milliamperes, 10-inch diameter, and from 3 to 7 minutes time for each exposure, depending upon the age of the patient. From the experience with these cases and subsequent treatment of other cases, fractional dosage seems to promise better and more uniform results than the single massive dose. It is, therefore, advisable to give each case at least four treatments as a minimum, using the following factors every two weeks 7-inch spark gap, 5 milliamperes, 10-inch diameter, and 3 mm., 18 sec. time through 3 mm. aluminum. These factors give one skin unit of filtered ray, which corresponds to .5 skin unit unfiltered in effect on the skin.

The younger patients are immobilized in a recumbent position with the head at a certain angle. The position may be assumed by the adult patient with the proper placing of pillows without the use of straps. The selective action of x-rays on embryonic tissue or its effect on the cell in certain phases of mitosis are the usual methods of describing x-ray effects on diseased cells as compared with normal cells.

The destructive action of x-rays on the cells of these enlarged lymph follicles might also be explained on the ground of their having been stimulated to excessive cell proliferation to such an extent that there remains less resistance to the x-rays than in the normal



cell. It seems probable that x-ray treatment will be indicated in cases of diseased tonsils and infratonsillar lympho-nodes associated with chronic endocarditis, pericarditis, hemophylia or any co-existing conditions which contra-indicate operation or an anesthetic. After tonsillectomy in subjects above the sixth or eighth year, and especially in adults, there still remains a considerable and possibly a vast amount of diseased lymphoid tissue containing pathogenic bacteria, in which cases it would seem reasonable to believe that the x-ray will prove to be of value. Time must be allowed for the determination of permanency in the results.

**WILLIAMS, F. H.:** Treatment of Hypertrophied Tonsils and Adenoids by Radium, a Preliminary Statement. *Boston Medical and Surgical Journal*, 1921, clxxxiv, 256.

Murphy, Wetherbee, Craig and Hussey published (*Jour. Am. Med. Assn.*, 1921, lxxvi, 228) an interesting paper on "Induced Atrophy of Hypertrophied Tonsils by Roentgen Ray". Treating the tonsils from under the angle of the jaw and the adenoids through the back of the neck is open to criticism as it exposes other parts than those it is desired to reach. The rays from radium also act on lymphoid tissues, and can be applied directly to the tonsils and adenoids, the neighboring parts being protected by lead; when radium is employed the maximum radiation reaches the tonsils and adenoids, and the minimum other parts. Another advantage of radium is that the output is constant, and the dosage can be exact. The author has used 50 mg. of bromid of radium in a flat container, with the rays filtered by 0.83 millimeter of aluminum, held directly against or near the tonsil. The radium should be withdrawn every few minutes, or as often as is comfortable for the patient, until the total exposure of fifteen minutes, more or less as required, has been reached. Improvement follows promptly, but the ultimate results may be expected only after some weeks. It seems better not to attempt complete healing by one treatment, but rather to give two or perhaps three treatments at intervals. Two instruments for application of the rays are described. Before applying the radium, the throat should be moistened with a suitable solution of cocain to prevent gagging from the insertion of the container. All instruments should be cov-

ered with two thicknesses of rubber. The author has treated the tonsil only by this method. The adenoids may be reached through the nose by a small instrument, carrying radium, from the end of which the rays issue upwards. They may also be reached by directing the roentgen rays upon them through the nose instead of through the back of the neck. This treatment might be carried out, for example, by distending the nostrils with a special bivalve speculum, one blade inserted horizontally in each nostril, and by protecting the skin inside the speculum with oxide of zinc plaster and that outside by sheet lead. In this case the length of exposure would be shorter, for children only about one minute, then when rays are obliged to traverse a large amount of dense tissue, and the risk of burns would be far less. It is noteworthy that after treatment by radium, the author has observed striking improvement in acute and sub-acute tonsillitis.

EDEN, T. W., AND PROVIS, F. L.: **Seventy-five Cases of Uterine Fibroids and Chronic Metritis Treated by X-rays.** *Lancet*, February 12, 1921, 1, 309.

A series of 46 patients were treated for uterine fibroid with the x-ray. The immediate effects produced by the prolonged exposures used were not constant. The majority of the patients suffered more or less from fatigue which lasted for two days or more. In one or two, rather marked prostrations occurred. With regard to the skin there were only 2 cases of slight dermatitis, both of which cleared up without ulceration; there is no doubt that by efficient filtration and protection the skin can be adequately guarded. The question of the possibility of injury to such organs as the intestines cannot be so readily answered. Cases of x-ray ulceration of the small intestine have been recorded in France and Germany, and in view of the frequency with which coils of jejunum are found lying in the pelvis, they may, of course, be subject to irradiation along with other pelvic contents. No such case was recorded in this series but one case was operated on for pelvic inflammation eight months after the cessation of treatment and terminated fatally. The risks of failure with x-ray treatment in suitably selected cases are so small as to be negligible; the x-ray menopause may be attended by more severe flushings



than in the normal menopause, but in other respects there is no difference between them; there is no tendency to corpulency or to psychological changes.

ROOF, W. O.: **Observations on the Etiology and Treatment of Acne Vulgaris.** *Journal of the Medical Society of New Jersey*, 1921, xviii, 52-56.

The author formerly employed the x-ray as an adjunct in the treatment of acne but is convinced that he can get safer and more satisfactory results without it. True, the x-ray tends to shrink the sebaceous glands and lessen their activity but it also tends to render the skin permanently dry and harsh and occasionally this condition is distressing to the patient.

CESBRON, M. H.: **Actual Methods of Treatment of Cancer of the Rectum by Radiotherapy** (Methodes actuelles de traitement du cancer du rectum par la radiumtherapie). *Paris medical*, February, 1921, xi, 121.

Among the pathological kinds of neoplasm in the rectum, the two most common are the epithelioma with prismatic cells at the edge of the superficial epithelium of the intestine or in the glandular epithelium, and the lobulated pavement epithelioma on the edge of the epithelium of the anus of the ectodermal type. These two kinds are variously sensitive to radium, the prismatic forms always reacting much more vigorously than the others. The whole tumor should be irradiated equally throughout the parts. The normal anatomical portions should be protected. The dose to be given and the intensity of the raying should be determined as accurately as possible. If one aims at a cure, there should be but a single radiation. Experience has shown that a second irradiation does not provoke, when given in the same dose, the deep modifications observed after the first treatment, as a sort of vaccination of the tumor is produced to radium. On the other hand, repeated radiations even at long intervals do not strike the same cancer cells when they reach the same healthy cells whose recovery is not so rapid, so that there is created in the healthy

tissues an accumulation of rays dangerous for these tissues. The old procedure which consisted only of the introduction of an intrarectal radium bearing apparatus can respond but very incompletely to the requirements. Modern methods are especially characterized by the numerous foci. First of all the patient should be very carefully examined with the rectoscope, and a fragment of the tumor should be removed for microscopic examination. It is indispensable before fixing the prognosis of a treatment (dose and intensity, particularly) to know the histological form and its presumed degree of radio-sensitivity. Then, whenever possible, a surgeon should make an iliac anus incision and treatment should not be begun until fifteen days after operation. On the eve of the treatment and on the day itself the terminal end of the intestine should be washed out. If the preliminary operation is impossible, the patient should be given a saline purge the day before operation. During the retention of the radium bearing apparatus the patient should take on the first day, a pill of 1 cg. (.1543 grain) thebaic extract, and the following days, two pills a day. The apparatus withdrawn, a lavage of the rectal ampule should be made. All the applications of radium by radium puncture should be made with the most careful antisepsis—shaving of the region, cleansing of the anal opening with tincture of iodine then with alcohol, sterile clamps. If it is necessary to desensitize the patient in order to place the needles, kelenes, or better, nitrous oxid should be given. The anal or sphincterian cancer is rather rare. If it is a slightly thickened neoplastic ring, without touching the rectal ampule or the skin, a thick filter of 2.5 mm. of gold or of 2 mm. platinum should be used. To avoid secondary raying, the needle case should be surrounded with an aluminum plate 0.2 mm. in thickness. The whole should be placed in the middle of a fine thin cork, of a thickness of about 5 mm. at the entrance of the apparatus. This cork should be introduced into the anal orifice at the center of the neoplastic ring. The dose to be used cannot be stated definitely as it must be different in particular cases. There will be something like 20 millicuries destroyed in 120 hours which will be equivalent to an average intensity of 166 microcuries an hour. It is in the ampullar cancer, the annular form, that the intrarectal apparatus can be best applied. The dose will vary according to the extent of the lesion from 20 to 30 millicuries destroyed in 4 days. Infiltration in patches is accomplished by taking a cast of the rectal



ampule with dental wax and inserting in this cast the proper amount of radium. The cast is then placed in the correct position, the radium toward the diseased portions. The author uses an oval rubber balloon 10 cm. (4 ins.) long and 5 cm. (2 ins.) wide. On the sides of this balloon are tubes of pure rubber to be used for the radium tubes. Once this is in place it is filled with water. The limited tumor, formerly so difficult to treat, is now very simple owing to the use of double-bevelled platinum needles. The rectosigmoidal cancer is to be treated by the introduction of a rubber sound containing the string of radium-bearing tubes. The massive cancer having exceeded more or less extensively the rectal wall demand that tubes be placed throughout the thickness of the tumor as well as in the rectal canal. Under anesthesia by way of the perineum, platinum needles are introduced, similar to needle used with hypodermic syringes. These needles hold at their extremity on emanation tube 15 mm. ( $\frac{1}{2}$  in.) long. The needles should be of different lengths. As the needles are only active at the end, it is wise to withdraw them 1.5 cm. at the end of the second day. The radiation should last 96 hours. When the vagina is also affected, great care must be taken to avoid the destruction of the partition. A 2 mm. platinum filtration with a weak raying should be used. Harrington-Janeway has experimented with bare tubes.

## SECTION ON NEUROLOGY AND PSYCHIATRY

BRAYTON, N. D.: **Paresis: Past and Present.** *Southwestern Medicine*, 1921, v, 1-5.

Osler calls paresis chronic diffuse meningo-encephalitis. He defines it as a chronic progressive meningo-encephalitis, associated with psychical and motor disturbances, finally leading to dementia and paralysis. Chase, in his work on *General Paralysis, Practical and Clinical*, says that general paresis is a subacute and chronic degenerative disease of the brain, often extending to the spinal cord and nerve trunks. It is marked by progressive enfeeblement of the mind and concomitant paresis of the entire body. Mentally there is moral and mental perversion with an abnormal sense of well-being or actual delusions of exaltation followed by slow dementia, to which is generally added insanity of maniacal, melancholiac confusional type. Physically there is gradual development of tremor, pupillary changes, loss of co-ordination, notably of speech and gait, trophic complications, occasional epileptiform or apeplectic seizures, and finally general dementia and paralysis. Paresis, like other diseases, plays favorites. Men are more often affected than women. There are, at present three times as many male paretics as females. The Hebrews are less affected than the Christians, probably because of circumcision. It occurs chiefly after the age of thirty and overwhelmingly among married men and women as opposed to bachelors and unmarried women. Paresis and ataxia, as well as other nerve diseases from which we have to differentiate paresis (cerebral syphilis, disseminated sclerosis, and paralysis agitans) are appendages to Western civilization, as are also neurasthenia and a score of other diseases. These are diseases which do not occur frequently in non-



colonized and non-commercial world trading races. The simple people of simple faith have no paresis. Early recognition of the disease and combat of its symptoms may offer some temporizing hopes, but the most that can be said at the present time is the too common average "three years". Paresis is syphilis with its modifications—syphilis plus alcohol, plus venery, plus high living.

FRASER, A. R.: Some Account of the Responsibility of Intensive Treatment Methods with Regard to the Incidence of Early Neurosyphilis. *The American Journal of Syphilis*, April, 1921, v, No. 2, p. 201.

There has been too much stress placed upon the place of the Wassermann reaction in the diagnosis and treatment of syphilis. Too often the plan for treatment is put off until the arrival of pathological reports, and too often the clinical opinion is subservient and the treatment too blindly follows the Wassermann reaction.

The stage of central nervous system involvement should be anticipated in all cases of primary syphilis. The steady increase of the incidence of early cerebrospinal syphilis should increase our anxiety on this point. The lesion may appear after certain periods of incubation, but even before this the stage of generalization has begun. The chancre is real protective cell reaction, and the more vigorous this is the longer is the generalization delayed. The so-called secondary shown in the rash, is general infection which may then penetrate the meninges. The attacking organism is seldom destroyed by these reactions, only held up. The central nervous system is invaded at the time of general systemic invasion, though they may lead a harmless, saprophytic existence for years.

Antibody production is produced in the general systemic circulation, while cell reaction is apparent. The central nervous system depends upon this general systemic circulation for its antibody supply, and as long as such supply is available the nervous system is not likely to suffer. We should preserve the antibody supply available for the central nervous system until every individual spirochæte has been killed off, or until we are sure such invasion has been prevented.

We must not conclude that a patient is cured as soon as the serum shows a negative Wassermann. This may often be a fatal, and un-

justifiable proceeding. Also if clinical signs are absent, the positive Wassermann is not always the signal for instituting treatment. Very often has a cerebrospinal lesion been caused by a too sudden and forcible use of arsenobenzine, because the patient happened to show a positive reaction in the serum or spinal fluid. These accidents occur much too frequently. We should not try to sterilize, in these cases, the general systemic circulation too quickly, as it causes the central nervous system to be left high and dry, without intrinsic antibody supply to draw upon.

We protect the central nervous system by proceeding slowly in the sterilization of the systemic system, since the supply of antibodies reaches the brain and spinal cord by an ultrafiltration of the antibodies circulating in the blood plus a very small supply generated intrinsically. If the initial sterilization has been too sudden and thorough, the spirochæte may make his position in the nervous system so secure that even slow action of mercury cannot prevent early neurosyphilis. This takes the form of meningitis.

When can we be sure the central nervous system is involved? Pathologic changes are found in the cerebrospinal fluid in the first year of infection in from 25 to 35 per cent of the cases. They may show clinical evidence of this involvement, or may not. Lymphocytosis in the cerebrospinal fluid where the chancre was still unhealed, has been found in 35 per cent of the cases, even where generalized symptoms were not apparent. Severe ocular disturbances, showing pachymeningitis, are found in early syphilis. Ophthalmologic examinations are of great value in the primary stage, as well as later. The reflexes should be investigated, as well as the condition of the circulation.

The following groups can be differentiated:

- (1) Asymptomatic (most common group),—cerebrospinal fluid showing changes suggestive of meningitis, with no symptoms. Nevertheless, there may be no pathologic changes, with actual intrathecal invasion. This is found in those cases in which the central nervous system fails to react, with practically no antibodies, the spinal fluid appearing normal.

- (2) Meningeal group,—severe headache, insomnia, somnambulance, noises in the head, vertigo, more or less deafness, optic neuritis, diplopia and paralysis of the recti muscles, and final opisthotonos.



(3) Neurotrophic,—acneiform and lichenoid syphilids, alopecia, leukoderma, with meningeal symptoms and spinal fluid changes.

(4) Neurorecurrence,—affections of individual cranial nerves, inequality of pupils, sluggish reflexes, and cardiovascular changes.

(5) Psychic,—melancholia, irritability, apathy, decreasing memory, moodiness, brutality, and even suicidal tendencies.

Clinical and serological examinations should be carried out in nearly every case before the fourth year after infection, and again about the tenth year.

The fewer serologic tests done, the better for the peace of the mind of the patient and of the physician. Lumbar puncture is indicated, first, if diagnosis of the cerebrospinal system is in doubt, or if syphilis itself is in doubt; second, where clinical nervous involvement is shown to determine, if meningitis is present, or, if present, to indicate, its severity; and third, as an aid to prognosis in a case under treatment. In early syphilis, where the nervous system shows reaction to the infection, a better prognosis can be held.

Early neurosyphilis is caused by other factors besides faulty early treatment.

(1) *The Patient's Resistance*.—A severe primary stage tends to later nervous implication, given even mild primary stage, coupled with severe cutaneous syphilids. The nervous system is but mildly involved, if at all.

(2) *Natural Protected Power of the Nervous System*.—This is seen in the South African native in its best development. Nevertheless a central nervous system which reacts vigorously to the infection must depend less upon the systemic circulation for its antibodies, than the nervous system which failed to react. Do not treat cases which give positive pathologic changes in the spinal fluid during the latent stage, if there has been previous adequate treatment.

(3) *Stage at Which Treatment Is Begun*.—Begin active treatment before stage of generalization has set in; thus invasion of the central nervous system is prevented; rapid sterilization is called for, and there may need be no thought as to subsequent danger to the nervous system.

(4) *The Type of Infection*.—There seems to be little doubt that the organism of syphilis exists in some form other than the spirochæta pallida. Some believe that general paralysis is due to a special variety. There may be a difference between the spirochæta of gen-

eral paralysis and those of primary syphilis. This has not been fully worked out.

*Conclusions.*—The antibody supply after neurosyphilis is demonstrated, should be conserved indefinitely by slow, steady sterilization, which is secured by continuous arsenic and mercurial treatment over a period of years.

There should be no blind-folded method of working to and for a negative Wassermann.

There should be no method of working to a mechanical timetable, or the treating of primary syphilitics *en masse*.

Pathological findings should be interpreted in the light of the clinical picture. We should never lose sight of the importance of the central nervous system as regards the patient's future.

The central nervous system is invaded at the same time as the generalized invasion.

Pathologic spinal fluid may indicate implication or protective power; in absence of symptoms, we cannot accurately interpret the findings.

The invasion of the central nervous system should be taken for granted, for the security of the future of the patient.

Clinical opinion, observation and judgment should be correlated with careful interpretation of pathologic findings. Treat each case on its merits and not as one of a series.

KAPLAN, D. M.: **Endocrine Tropisms—Gonadotropism.** *New York Medical Journal*, July 6, 1921, p. 26.

There are no men or women without heterosexual psychic or somatic appanages, no matter how perfect their architecture or functions may be. An adequate knowledge of endocrine principles and facts enable us to collate apparently dissimilar findings. In the case of a woman who presents a hairy upper lip, or undeveloped breasts, or hairy shins, or a masculine distribution of pubic hair (apex upward), the cause is found in an incomplete gonadal equipment. Their complaints have often been classified as sexual neurasthenia, and have received only superficial attention, and if anything, only make-shift therapy. Many of these cases are benefitted by a vigorous therapy of ovarian extract; likewise there are many



instances where women showed their only improvement after suitable therapy with sperminum (Poehl) by mouth or injection.

We should alleviate their subjective discomfort by proper endocrine therapy, bearing in mind their gonadotropism.

With endocrine products, we should not take up ready-made diagnosis and accompanying suggestions of the manufacturer. If you cannot work out your own therapy, the manufacturer cannot help you.

Thyroid extract should begin with small doses only, less than a quarter grain. Suprarenal extract may be given from 1/6 of a grain to 1 grain at a dose. Ovarian extract must be used in larger doses, one grain every one or two hours, as the case needs. With mammary extract, the author has given as much as 120 grains a day for a week.

**BOUDREAU, E. N.: Present Opinion on Intraspinal Therapy in Neurosyphilis.** *Medical Record*, September 24, 1921, c, No. 13, p. 535.

The author has read the literature on the different types of intraspinal therapy in neurosyphilis and from these articles has drawn certain conclusions.

His conclusions are these:

(1) The central nervous system is early invaded by the *Treponema pallidum*, and without necessarily giving clinical signs.

(2) Vigorous intravenous salvarsan treatment associated with mercury and the iodides removes the danger in a large number of the cases. This must be confirmed by negative finding in the cerebrospinal fluid.

(3) Certain cases do not respond to this treatment alone.

(4) For these cases the best treatment so far devised, but not ideal, is by the Swift-Ellis-Ogilvie method because various observers agree that clinical evidence shows it to be beneficial and the laboratory evidence is that in all but potential paretics the signs become negative if thoroughly carried out, and because both avenues of approach are employed.

(5) The method of Byrnes (mercurialized serum) is more dangerous and produces severe reactions.

(6) The spinal drainage method of Dereum is not without danger, is extremely painful, and the results obtained by observers are not in agreement.

R. H. BENNETT.

GELMA, E., AND HANNS, A.: **Somnolence and Psychic Trouble in Lethargic Encephalitis** (Sur le sommeil et les troubles psychiques dans l'encephalite lethargique). *Annales de medicine*, 1921, ix, 17.

The authors found their patients, in general, in a lucid condition, speaking slowly, but responding correctly to questions. With attention sustained by frequently soliciting his interest, one is able to keep the patient awake for some time. Sleep is often accompanied by dreams, which are reported with more or less facility. Between the attacks of narcolepsy, psychic troubles were observed, which were connected with the dreams, sometimes post-oniric fixed ideas, sometimes the syndrome of mental confusion, taking the place of sleep, with incapacity to respond to questions, onirism, and disorderly conduct.

In one case observed by one of the authors, and Chavigny, the trouble began with a crepuscular state, followed by amnesia, in the course of which the patient committed a robbery, which has been the object of a medico-legal investigation.

Every psychopathic syndrome has been observed in the course of this disease, from general paralysis, maniac excitation, acute delirium to plasticity and catalepsy.

BOYD, W.: **The Sequelæ of Epidemic Encephalitis.** *The American Journal of Medical Sciences*, April, 1921, clxii, 248-258.

In those recovering from encephalitis perhaps the most common complaint is marked general asthenia, which may last for many months. Headache, or a sense of fulness or discomfort in the head, has been a common after-effect. Alteration in the temperament was observed in a number of the author's cases, sometimes with definite evidence of mental disturbance. One girl aged six years, after a typical attack of lethargic encephalitis, made a good recovery. Three months later her parents reported that her disposition had undergone a complete change. From being a bright playful child she had become dull and apathetic and would sit for hours motionless in a chair almost like one suffering from myxedema. A peculiar feature was an occasional loss of bladder control, more especially at night. At least three of the cases developed mental symptoms. In



two of these delusions were the most prominent feature. In the third, there was a general mental deterioration, accompanied by loss of memory and inability to focus the attention. Occasionally the apathy and torpor, characteristic of the acute stage of the disease, establish themselves as apparently permanent features of the patient's mental constitution and the flash and speed of the mind are lost forever. Whether the mental processes of such a patient will ever return to normal it is at present impossible to say. It appears not unlikely that he will gradually sink into a state of dementia.

Evidence of prolonged cranial nerve involvement has been observed in a number of cases. In several instances in which facial paralysis was a feature of the disease proper a lingering weakness has been detected many months later. Diplopia is a more common symptom. Weakness of accommodation is perhaps the most frequent indication of cranial nerve weakness. The most remarkable of the sequelæ of epidemic encephalitis are motor disorders of the nature of spasms, automatic, athetoid and choreiform movements. In any considerable group of cases of encephalitis many examples of what may be called the Parkinsonian type may be encountered. The author's series provided some striking pictures of paralysis agitans, although without the characteristic tremor. A case described by Russel (*Canad. Med. Assn. Jour.*, Aug., 1920) bore a close resemblance to progressive lenticular degeneration, including the peculiar emotional disturbances. These cases are slower in clearing up; not only are the symptoms persistent, but it almost appears as if in these cases the lesion were progressive. The brain substance has been the seat of an inflammatory process, the brunt of which has fallen not on the nerve-cells but on the interstitial tissue. An inflammatory exudate has been formed, mainly perivascular in type, but also extending into the surrounding brain substance, and in the more severe cases hemorrhage and thrombosis are present, accompanied by a corresponding degree of tissue disintegration and degeneration. Such a condition in any other part of the body would be followed by organization and repair; with fibrosis when once started it is by no means a self-limited process. The net result of all this is interference with the nerve paths.

PULVIRENTI, S.: **A Case of Acute Purulent Lumbar Spondylitis.** *II*  
*Policlínico* (Sez. Chir.), January 15, 1921, xxviii, 27.

Acute purulent spondylitis is a rare disease, especially in adults. The form with intraspinal abscess, and phenomena of acute compression of the medulla or of the cauda equina is even more rare. Some cases diagnosed in time can be operated upon and cured. Other cases are treated of in reports of autopsies.

In one case, upon the patient's entrance to the hospital there were three sorts of symptoms present: symptoms relating to the nervous system, symptoms relating to the vertebral column, and local and general symptoms of a staphylococcus infection.

The severity of the nervous symptoms attracted immediate attention, giving indications of an organic affection of the spinal medulla in the lumbosacral tract. As the nervous syndrome could not be interpreted as being of a functional nature neither could one think of a polyneuritis.

An organic lesion of the medulla, lumbosacral tract, or another lesion causing the same syndrome is that of the cauda equina in the superior tract with lumbar and sacral causes.

The medullary lesion which corresponds to the cord shows placid paraplegia with abolition of reflex of phenomena of vesicorectal disturbance of the sensibilities, etc. Differential diagnosis must distinguish the two lesions.

Other elements which must be considered in diagnosis besides the seat and the nature of the process, are the acute, not sudden, arising of medullary symptoms, the absence of trauma of the vertebral column, of phenomena showing symptoms of an affection of the vertebral column, the preëxistence of an organism of a focal suppuration and the presence of general phenomena supporting the hypothesis of a focal metastasis of the lumbar region.

From this data one may conclude that there is a lesion of the medulla or cord (chronic myelitis, medullary and vertebral tumor, chronic spondylitis). The persistence of a focal suppuration, the acute arising of nervous symptoms and general infective phenomena point to a medullary abscess, and acute myelitis.

Treating of a medullary abscess is not easy, as the pain and rigidity of the vertebral column appear with purulent meningitis. The diagnosis of acute myelitis of the lumbosacral tract is easier as this



form of acute secondary myelitis in focal suppuration is not so rare. With such a diagnostic hypothesis the nervous syndrome is very evident. In the above case the pain was in the lumbar tract, not in the inferior dorsal tract, the place corresponding to the lumbosacral medulla. Symptoms of an affection of the urethral column were evident (rigidity of the lumbar tract with slight kyphosis, pain at point of pressure, etc.) and led directly to the diagnosis of spondylitis of the lumbar tract.

Chronic spondylitis is not considered here as objective data and etiological considerations carry out the diagnosis of acute purulent spondylitis of the lumbar tract.

Acute spondylitis can follow the medullary nervous syndrome and exactly as in chronic tubercular spondylitis when there is also a compression of the medulla of the cauda equina. In the author's case the lumbar vertebræ were the seat.

The lumbar puncture is fraught with some danger. In this case here was pus, not merely turbid spinal fluid, which evidently did not come from the arachnoidal space as there were signs of a purulent spinal meningitis which could not have remained restricted.

The report of the operation and the ultimate course confirmed that this case was one of acute purulent staphylococci infected lumbar spondylitis. There was an involvement of the superior lumbar tract completely compressing the cauda equina out the intact dura.

Acute spondylitis or acute purulent vertebral osteomyelitis is rare. In three cases one was of the cervical region, one of the dorsal region and one of the lumbar region.

Trauma is important as a cause of localization. The staphylococcus aureus is usually the etiological agent; occasionally it is staphylococcus albus or some streptococcus. The infection has a point of departure in primitive foci (an infected wound, an angina, etc.). Focus of osteomyelitis is rarely at a distance from the vertebral process; usually it is in the lumbar region, involving one or more vertebræ, a vertebral body rash, acute osteomyelitis and formation of a superperiosteal abscess, osteal necrosis. The abscess forms in the vertebral column, a space extending to the superficial bone of the cavity, rarely forming an annular lesion. The pus collects in the periosteum and the dura mater causing thickening of the meninges and forming an unsurmountable barrier to the suppurative pro-

cess, resembling a meningeal reaction, and sometimes going on to perforation and fatal meningitis.

The abscess in the spinal cavity presses on the dura mater, the medulla or cord and causes corresponding nervous syndrome. If no surgical treatment is used, it may be found at autopsy.

This form manifests a number of symptoms clinically, some leading to consideration of typhus, lung trouble, peritonitis, etc., some attracting attention to the vertebral column (pain in moving, rigidity of column, etc.). There might be slight kyphosis from contracted muscles.

It is important to note that nervous phenomena appear as soon as the vertebral lesion is evident, varying according to amount of compression. In the inferior lumbar region there is compression of the cauda equina with paralysis, loss of reflex, retention of urine, disturbance of sensibilities. Death occurs unless the abscess is treated, then nervous phenomena disappear. Cure must be effected by surgery and the results are better the sooner the diagnosis. Sometimes superficial incision of the abscess is enough. In encapsulated abscesses of the space laminectomy is performed with care not to injure the dura mater. The lumbar puncture must be made with care, when there is any suspicion of pus in the space, in order not to infect the meninges.

In the author's case the patient became ill with furunculosis; microscopic examination of a pus culture showed infection by *Staphylococcus aureus*. While the place of suppuration was cured, the infection moved without any previous trauma, located in the bony tissue of the second and third lumbar vertebræ. Fever recurred. There were lumbar pain and rigidity of movement in the lumbar tract.

The spondylitic process appeared with pus in the spinal cavity, causing compression of the cauda equina and a relative nervous syndrome. *Staphylococcus aureus* was found in a pus culture. With lumbar puncture compression was removed and cure effected.

This case showed the medullary syndrome of myelitis coexistent to pyogenic infection giving an acute purulent spondylitis with medullary syndrome of compression. Cure was effected by examination of vertebral column and puncture leading to an accurate diagnosis in time for surgical intervention.



DAY, G. H.: **Further Observations on Syphilis of the Nervous System with Report of Cases.** *Kentucky Medical Journal*, March, 1921, xix, No. 3, p. 95.

Salvarsan is in no wise a specific, and until its limitations are understood and treated accordingly, we will receive the maximum in return for a correct understanding of such an adjunct. The simplicity of preparation of neosalvarsan, the ease of administration, and quickly attained results in the clinical picture, give us a false security; cases later develop neurosyphilis because of undertreatment. Persistently negative blood does not always mean that the syphilitic is cured; no patient should ever be discharged without many negative bloods and a negative spinal fluid.

Corbus found on spinal puncture in so-called cured cases that 18.3 per cent had cerebrospinal manifestations, none having symptoms or lesions of any kind or description.

Results in syphilis depend upon, first, time of instituting treatment while disease is in the so-called primary stage, second, power of resistance of host and the type of infection, and third, method of treatment and the qualifications of the physician extending such treatment.

*First.*—With an initial lesion, a positive dark field before the blood is positive, offers the best chance of an early cure.

*Second.*—The resistance of patients varies both as to the infection and to the treatment, being unquestionably different strains of spirochæta, and many times patients have a lowered resistance, developing neurosyphilitic symptoms rapidly in spite of well-directed treatment. With an early diagnosis in acute syphilis, a series of six salvarsans, followed by fifteen intramuscular injections of mercury, will usually give us a negative Wassermann; negatives obtained by mercury in series properly managed, will give us a cure, provided the treatment is checked by frequent Wassermann, and in every instance, spinal puncture made before pronouncing the patient cured.

*Third.*—A standardized treatment should be adopted, which can be applied to the average case, until a negative blood, when further specific treatment may be given until cure is effected. Routine may be altered in exceptional cases, treating blood primarily, patient secondarily. It is the cerebrospinal type that holds our interest at

this time. We must decide the questions in the light of the results obtained in our own experience, for it is only results that count.

Two methods of treatment are advocated in neurosyphilis: one, intravenous, the other, intraspinal. No hard and fast rule can be set down for a routine. Advocates of intraspinal therapy never claimed for the method that should be used to the exclusion of the intravenous, nor have they claimed that the choroid plexus is impermeable in all cases and that remedies introduced intravenously could not reach the cerebral or spinal tissues.

Patients who fail to improve under the most intensive treatment, symptoms rapidly increasing on administration of intra-spinal treatment, return from invalidism to full health, a fluid cell count of 50, a positive globulin and Wassermann, changed to normal cells and negative globulin and Wassermann.

**BALTHAZARD: Etiology of Criminal Assaults. The Victim. Assaults Falsely Alleged** (Etiologie des attentats de la pudeur. La victime. Attentats fausement allegnes). *Le Progres medical*, April 9, 1921, xxxvi, 159.

Most criminal assaults are committed by persons between 20 and 60 years of age, but as these compose the majority of males living, the statistics do not prove anything. A sort of perversion of paternal love leads these individuals to assault their own daughters. Diminishing genital power, genital malformation as cryptorchidism and hypospadias, and venereal diseases play a large part in the pathogeny of criminal assaults. At first because blenorragia creates for a certain length of time a misogyny. In some, this misogyny persists and they turn to sexual perversions, pederasty, etc. These reasons explain a large number of criminal assaults. There are other processes of psychology which turn certain individuals to homosexuality. All these individuals are responsible, they have a diminution of sexual power, but they are lucid and conscious. They have no excuse for their acts, which spring from impulses which they cannot resist. In another group of individuals there is less responsibility because they are really ill. Without being really deranged, there are some who have alterations of the central nervous system, psychic or medullary, which excite them to criminal assaults. These may be classified.



The spinal cases commit the act without cerebral participation—it is an act of automatic reflex. There are the spinal cases which are at the same time “posterior cerebrals”. In these the act is always brutal and imperious. In man this perturbation causes satyriasis, in woman nymphomania. Finally there are the “imaginative”, the “anterior cerebrals”. In this list are placed fetichism, sadism. The pure “anterior cerebrals” are poets, imaginative people who are content with platonic love, called erotomaniacs, in love with a star, or a statue, as Pygmalion was. There are exhibitionists who perhaps belong to excellent families but are arrested for exposing the genital organs in church, or elsewhere. They have an impulse which they cannot resist. These must not be considered deranged as Blanche holds. However, their responsibility is doubtful. Prison is often an effective therapy. These individuals are declared irresponsible and freed, recommencing their practices. An asylum for the criminal insane, or semi-responsible has been considered. This would be the best solution of this problem.

# INTERNATIONAL MEDICAL DIGEST

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# INTERNATIONAL MEDICAL DIGEST

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## SECTION ON GENERAL MEDICINE

CHEPLIN, H. A., AND WISEMAN, J. I.: **Observations on the Effect of Bacillus Acidophilus Milk upon Cases of Chronic Constipation.** *The Boston Medical and Surgical Journal*, November 24, 1921, clxxxii, No. 21, p. 627.

The object of the investigation was to study the therapeutic value of the oral administration of bacillus acidophilus in cases of chronic constipation. Five hundred cubic centimeters of the product reinforced by 100 gm. of lactose were ingested by the patients each day in two equal doses. No special diets were prescribed. Eight cases are briefly described. In all the cases favorable effects were obtained. In most cases the response was prompt and daily evacuations were recorded. Although in some cases the response was less pronounced at the start quite an appreciable difference on the effect of the bowel movements was noted when the amounts of the bacillus acidophilus milk and added lactose were doubled. The bacillus acidophilus milk and lactose diet exerts a beneficial influence in regulating the fecal eliminations from the bowel and in changing the character of the intestinal flora. Within a few days after the ingestion of the sour milk and added lactose daily stools are obtained and a transformation of the flora takes place in which the usual mixed bacteriological types give way to a more simplified flora largely represented by bacillus acidophilus. It is to be assumed that the bacillus acidophilus milk has this influence in virtue of the large number of viable organisms which it contains and of the lactose present.

M. M. BANOWITCH.



STEWART, SIR J. P.: **Spasmodic Respiratory Affections.** *British Lancet*, December 17, 1921, ecl, p. 1261.

The unstriped musculature of the bronchi is innervated by the dorsal nucleus of the vagus. Substances in circulation or reflexly acting on this nucleus provoke attacks of bronchial asthma. Hiccup is a spasmodic, myoclonic, diaphragmatic contraction. It is due to gastric, peritoneal, diaphragmatic and cerebral disturbances as encephalitis, tumors of posterior fossa. Pertussis is an infection acting on the coughing center in the medulla. Tetanus, rabies and epilepsy cause spasms of expiratory muscles. Chorea acts in the same manner. Parkinson's disease sometimes involves the laryngeal muscles. Tics produce stammering by acting on respiratory muscles.

Electrocardiographically the P-R interval was increased in four cases. T wave was inverted in lead 2 in four cases. The latter finding gives a bad prognosis.

H. JOACHIM.

MACKENZIE, G. M., AND BALDWIN, L. B.: **Local Desensitization in Hypersensitive Individuals and Its Bearing on the Prevention of Hay-fever.** *Archives of Internal Medicine*, December, 1921, xxviii, No. 6, p. 722.

The authors show that the repetition of the application of antigenic substances, either cutaneously or intracutaneously, to the same spot, in susceptible individuals, resulted in local loss of the power to react. The area actually occupied by the wheal becomes completely exhausted, the area of erythema partially so, and elsewhere the skin reacts as strongly as ever. This exhaustion seems to be specific, as in an individual sensitized to both ragweed and chicken feather, a skin area exhausted by repeated applications of chicken feather reacted promptly to ragweed and vice versa. More closely related antigens such as oat and wheat gave results suggesting a group reaction. The cutaneous reaction induced by histamin, which is not an antigen, is an urticarial wheal, but progressively increases in size with each repetition of the application to the same site.

The authors have made practical application of this local desensitization which they describe, by applying to the nasal mucosa sub-

stances to which patients are sensitive. The technic of the application is not described but it is stated that the daily application of such substance for from four to six weeks has resulted in certain patients becoming tolerant of more than a thousand times the amount which at the outset caused marked symptoms. A later report on the therapeutic results is promised.

T. HOWARD.

MUTCH, N.: **Alimentary Infections in Chronic Arthritis.** *Lancet*, December 17, 1921, ccl, p. 1266.

The mere removal of infected foci in the teeth and tonsils in chronic arthritis often leads to no improvement. In many of these cases, streptococci and staphylococci have been isolated from the stools associated with intestinal stasis as determined by the barium meal. Bacteriologically almost pure cultures of streptococci could be demonstrated, often associated with non lactose fermenting colon bacilli in the ileocecal region. In addition a redundant and reduplicated colon, kinks, ileocecal bands, etc. were found. Two cases are reported as cured by colectomy. The author advises a culture of stool; vaccine, thyroid therapy, and surgery (intestinal) in cases of chronic arthritis.

H. JOACHIM.

FRIEDENWALD, J., AND MORRISON, T. H.: **Personal Experiences with Nonsurgical Biliary Drainage.** *New York Medical Journal*, September, 7, 1921, cxiv, No. 5, p. 280.

Based on Meltzer's observation that a 25 per cent solution of magnesium sulphate introduced locally into the duodenum causes a relaxation of the sphincter of the common duct, and according to his law of contrary innervation a contraction of the gall-bladder, Lyon evolved his method of diagnosis as well as a method of nonsurgical biliary drainage.

The authors conclude: (1). The method of biliary drainage furnishes a valuable aid in the diagnosis of gall-bladder affection. It is particularly valuable in that it enables us to diagnose these condi-



tions early before evidences of complications have manifested themselves.

(2) It presents an important means of determining the presence of focal infection in the gall-bladder, a condition which maybe of the greatest therapeutic and diagnostic value in obscure conditions.

(3) While this method of treatment is still in its infancy, it furnishes us with a means of affording definite relief in certain biliary affections for which hitherto radical measures have been required. It is an extremely valuable aid in the treatment of catarrhal jaundice, biliary stasis, and gall-bladder infections, and is helpful in relieving the infection which may still remain following gall-bladder operations.

J. ROSE.

WILENSKY, A. O.: **The Diagnosis and Treatment of Gall-bladder Disease.** *New York Medical Journal*, September 7, 1921, cxiv, No. 5, p. 295.

Disease of the gall-bladder and biliary apparatus—cholecystitis, choledochitis, cholangitis and cholelithiasis— is most commonly an affection of middle age, occurring with special frequency in women and closely associated with the incidence of pregnancy.

The various pathological pictures are essentially the following:

1. Gall-bladders of a practically normal histological structure. There may be many or few stones, or a single large stone, which, becoming encysted in the neck of the gall-bladder or cystic duct, gives rise to hydrops.

2. Large distended gall-bladders, showing atrophy and containing many or few stones. Stones may be present in any of the ducts.

3. Gall-bladders in which infection has taken place. These include empyemata of the gall-bladder (or infected hydrops), acute and chronic cholecystitis, all of these with or without stones. There may be pericholecystitic abscesses with and without perforation of the gall-bladder wall. Stones may be present in any of the extrahepatic or intrahepatic ducts and may be associated with a cholangitis.

4. The end results of Group 3. The gall-bladder may be larger or smaller than normal, much thickened or thinned, and is usually deformed. The amount of pericholecystitis may be so extreme as to produce symptoms.

5. Any of these types associated with a swelling of the head or head and body of the pancreas. The clinical picture may not be distinctive, or it is marked by the characteristics of a fulminating acute hemorrhagic pancreatitis.

Acute gall-bladder infections can produce perforation and either a general peritonitis or a localized pericholecystitic abscess. Chronic infective processes associated with stones can produce such chronic penetrations and perforations into adjoining viscera as to result in a fatality.

True infections cholangitis is marked with chills and fever and other signs of a high grade of intoxication and runs a rapid course: in milder forms it leads to connective tissue changes in the liver parenchyma and a precipitation of stones in the intrahepatic biliary passages.

For diagnosis the history is most important. To be included are: (1) Cases with definite attacks of gall-bladder colic; (2) the cases with indefinite symptoms referred to the right hypochondrium, or to the stomach; and (3) cases with the clinical picture of an acute intraabdominal infection localized in the right upper quadrant of the abdomen.

The physical examination yields the second best data which may be: (1) Entirely negative; (2) partially positive; or (3) entirely positive. The definite data include the presence of a palpable mass, the local and general signs of peritoneal inflammation or irritation, and the presence of jaundice.

In the absence of definite criteria, the diagnosis is always presumptive except in instances where the x-ray yields positive evidence of calculi. In many cases operation is an abdominal exploration.

Medical treatment can be only palliative. It is necessary to operate on these cases early when the risk is not so great as later, and in order to obviate all the secondary changes in the liver and pancreas.

The therapeutic possibilities of Lyon's method, with the presence of stones, or the results of infections, can be only palliative, or adjuvant to the necessary surgery. Any condition but the simplest is beyond the reach of this method for the procurement of permanent results.

The mortality in gall-bladder operations is dependent upon the number of complications. An associated cholangitis is most serious. With common duct obstructions the mortality may run as high as



fifty per cent. In uncomplicated cases, the presence of disease in the lungs, heart, or kidney is important in the mortality statistics. At an early stage of the primary disease these either do not exist or have not been aggravated to such an extent as to increase the risks of operative intervention. With the removal of these handicaps—accomplished by early surgical intervention—the mortality of operation should not be more than 2 or 3 per cent.

J. ROSE.

LYON, B. B. V., BARTLE, H. J., AND ELLISON, R. T.: **Clinical Gastric Analysis with Detail of Method and a Consideration of the Maximum Information to Be Obtained.** *New York Medical Journal*, September 7, 1921, cxiv, No. 5, p. 272.

The fractional analysis method is simple, safe, and sane, and is a method of necessity where gastric function is to be studied. It presents the acid values of the contents of the stomach at any time one cares to estimate them. Errors of secretion and motility of either the fasting or the digesting stomach can be observed. The time of duodenal reflex can be checked up and matched with the appearance of blood, pus, or duodenal exfoliation in the stomach; a strong confirmatory observation in suspected duodenal ulcer, if they should be coincidental. The time of mucoid impregnation of the contents can be estimated, and microscopic examination can be made of the fasting and digesting residues.

*Method of Analysis.*—Each patient is given the following instructions: "At nine o'clock the night before examination eat one meat sandwich (any kind of meat) with twenty raisins or six stewed prunes, and drink a glass of water or cambric tea. Eat or drink nothing after this, either during the night or early morning, until we give it to you in this office at 9 a. m. Do not brush teeth on morning of examination."

Note is made of the way the patient takes the tube, whether quietly or with retching, and to what extent the gag reflex is manifested (vagotonia versus sympathicotonia) and evidence of cardiospasm watched for. The entire contents of the stomach should be extracted.

As a test meal they use 50 grams of white bread and 350 c. c. of water.

The patient is instructed to expectorate the saliva into a receptacle. Fifteen minute extractions are made over a period of two hours. The first seven do not exceed 10 c. c. each, but at the two-hour extraction the stomach is entirely emptied. The material is filtered through gauze and the filter tested for starch. In this way the point at which the stomach becomes empty can readily be determined. When the stomach is emptied at two hours, it is lavaged with 250 c. c. of water to prove that it is empty of the fluid part of the meal and of bread crumbs which remain in dependent portions.

Each sample is examined grossly for amount, chyme, mucus and bile, and chemically for free hydrochloric acid, total acid and occult blood. In testing for acid 1 c. c. of filtrate is titrated against one one-hundredth sodium hydroxid, of which the number of c. c. is multiplied by ten, giving the degrees of acidity for each 100 c. c. of gastric contents. Dimethyldiamidoazobenzol and phenolsulphonephthalein are used as indicators. In testing for occult blood either a freshly prepared solution of benziden or the commercial occult blood tablets are to be used.

With the figures obtained from the titrations a graphic chart of the changes in acidity is constructed. The total amount of material withdrawn is computed and this is subtracted from the 350 c. c. originally given, and the amount that has passed the pylorus can be noted and a clinical estimation of gastric motility thus obtained.

Gastric analysis is primarily a measure of gastric work, fasting and digesting, motor and secretory. This measure of work is the measure of the physiological function of the stomach, secretory and motor, and any deviation from the normal in either acid values or motor activity must be viewed only in the light of pathological physiology. But gastric analysis is also an indicator of true intragastric pathology. This lies in the addition to the gastric juice of the products of that pathology. These are mucus, exfoliated epithelial elements, pus, blood, and bacterial colonies. And thirdly, gastric analysis serves as an indicator of extragastric pathology. It is recognized that most systemic and many local conditions, though far removed from the stomach influence that viscus. This influence is seen indirectly in its effect on the acid curves, and directly by the finding of products of this extragastric pathology added to the gastric secretions. Examples of the latter are the finding of swallowed pus from various sources and the occurrence of occult blood associated with biliary re-



gurgitation which is the only direct evidence of duodenal ulcer to be obtained from gastric analysis also finding of regurgitated duodenal epithelium, pus, mucus, and bacteria.

*The Twelve-hour Fasting Stomach Contents.*—The amount varies in health from a few cubic centimeters to from 50 to 80 c. c., anything above that amount being due to hypersecretion or retention. Sediment up to 5 per cent of the total amount recovered is within normal limits. Mucus that floats is freshly swallowed, whereas the type of very viscid, stringy, intimately mixed mucus is associated with absence of free hydrochloric acid at that particular period. The acid values of the fasting stomach varies within wide limits. The level of acidity in the interdigestive stomach is an expression of a vital function, and it fluctuates daily, and is influenced by loss of sleep, worry, nervousness, or overeating, drinking, or smoking the night before examination.

Frank macroscopic regurgitation of bile into either the fasting or digesting stomach is, with certain exceptions, an abnormal finding and points to disturbed physiology of the pylorus and duodenobiliary apparatus or to pathology within the latter zone. The exceptions are: First, if the patient does not take the tube well, but gags and coughs, bile may be squeezed out of the gall tract by the simultaneous contraction of the abdominal muscles and the diaphragm, and be regurgitated into the stomach. Second, in cases of marked hyperacidity, alkaline duodenal contents mixed with bile may be regurgitated into the stomach in an effort to lower physiologically the excessive acid.

*Microscopic Examination.*—Unstained preparations are used. With the high power it is seen that either the cells are practically intact or that the cytoplasm is digested away, leaving the more resistant nuclei. The nuclear remains of gastric cells are oval, highly refractive bodies, and the polymorphonuclear cells are seen as groups of two or three small globules. There is always a number of leucocytic cells in the fasting stomach, but if these occur in sufficient numbers to constitute pus, they are pathological. The type of epithelium with which the pus is associated is the deciding factor in locating the point of its discharge, and the finding of a predominance of buccal or respiratory epithelium should lead to a search of the mouth and respiratory tract for evidence of infection. In acid stomach both the

chief and parietal types of gastric cells are seen, but these are dead or dying, and show cloudy swelling.

In regurgitation from the duodenum the cytology is very well preserved. Duodenal cells (round, cuboidal, or oval cells somewhat longer than pus cells) can be recognized, and bile stained columnar epithelium from the biliary tract can be seen. The very tall bile stained columnar epithelium is only derivable from the gall-bladder. Bile stained pus cells, when found in association with this latter type of epithelium, point to infection somewhere in the duodenobiliary tract. When bile is regurgitated in to a stomach containing free hydrochloric acid, the bile salts are precipitated, giving the material grossly a turbid appearance, and microscopically it appears as small masses of yellow amorphous material. When such regurgitation takes place in an anacid stomach there is no such precipitation. Bile that has remained in the acid stomach for some time assumes various shades of blue and green.

Normally there is no gross or microscopic evidence of food retention in the twelve hour fasting stomach. Retention when found is not pathognomonic of any one pathological process, but it is frequently enough associated with graver conditions in and about the pylorus to necessitate a careful investigation into the causative factor. (Atony, pylorospasm, adhesions, stenoses from inflammatory edema, hypertrophy or from new growth within or without).

The question of the bacterial flora of the stomach is one upon which much still remains to be written. Bacterial bodies can always be found in the stomach, but whether they are living organisms, and whether, they are truly resident in the stomach, constituting an infected gastritis, or only in transit, are points of vital importance to determine. To answer the second question first, bacteria that are in transit are seen as single organisms or grouped in small masses. If, however, visible organisms linger long enough to become implanted in the gastric mucosa they grow in colony formation just as colonies grow on the surface of any suitable media. The finding of colonies associated with gastric mucus or epithelium is positive proof of the presence of infection in the gastric mucosa. The finding of occult blood in the fasting stomach is not very important unless the benzi-dene reaction is very strong and the guaiac reaction positive.

*Analysis of the Type of Curve Obtained.*—The actual acid value means very little. The shape of the curve means more. There are



certain types of curves that point to certain conditions. They all fall into one of five groups. Any of these groups with the exception of the third, can be associated with either hyperacidity or subacidity. The amount of acid secreted depends upon the irritability of the vagus, and the state of fatigue or integrity of the gastric glandulature.

Type I, normal curve, is one in which the apex is reached in from sixty to seventy-five minutes, and a return to within  $15^{\circ}$  of the fasting values occurs at 120 minutes. It is seen in healthy persons and in certain early states of intragastric conditions—principally catarrhal. The points indicative of this are gastric mucopus in the fasting stomach content, mucus and traces of blood in the digesting.

Type II, extragastric curve, rises steadily during the entire two hour period, or until the stomach becomes empty. This is usually found due to reflex irritation from pathology outside; as in duodenitis, duodenal ulcer, gall-bladder conditions, appendicitis, sigmoiditis.

Type III, achylia, shows no free hydrochloric acid present at any time. It is seen in malignancy of the stomach in later stages, oral sepsis, long standing cholelithiasis, and in the severe anemias.

Type IV, stepladder curve, reacts in such a way that the smooth ascent is broken by drops in both free and total acid, unassociated with biliary regurgitation, followed by a rise to a still higher level than that preceding the drop. It is not often seen but is of grave significance. It is present in active stages of ulcer, and is generally preceded or followed by hemorrhage.

Type V, delayed digestion curve, shows a primary small rise followed by a drop, and then by a practically normal curve. In certain cases the free acid does not come in until the secondary rise, and corresponds to the psychical achylia of some writers—the primary rise represents the psychic secretion, and the secondary rise the hormonal secretion.

Mucus, when found in all the extractions, is swallowed: whereas appearing only in the second half, is generally gastric. The finding of blood must not be taken as evidence of ulcer or neoplasm unless backed up by careful history, physical and x-ray examinations. It is generally due to mucosal congestion with diapedesis, or to miliary erosions, and should lead to examination of heart, lungs and liver and for obstruction in portal circulation. Occult blood in the gastric filtrates is more important than in the residues.

J. ROSE.

WENDKOS, S.: **Gastro-enterological Gleanings from the Mayo, Sippy, and Boston Clinics.** *New York Medical Journal*, September 27, 1921, cxiv, No. 5, p. 285.

The problems studied were: (1) How to diagnose cancer early enough to be operable; (2) how to recognize with greater sureness ulcers of stomach and duodenum in the early stages, before perforation occurs, and before adhesions and deformities have taken place; (3) how to differentiate more definitely the symptomatology of organic disease from functional disturbance; and (4) how to get a clearer conception of functional disease, or so-called neuroses.

*The Mayo Clinic.*—Fully half their patients are sufferers from gastro-enterological disease. All are given a thorough physical and routine laboratory examination, including urinalysis, blood tests, chemical analysis of the gastric secretion, and x-ray examinations. For the past six months only, they have used the fractional method of gastric analysis, but in a modified form on account of lack of time; they extract every forty minutes for three specimens. If achylia is present then the tube remains longer and more specimens are withdrawn. If acid is present in the first three specimens, the remains of the test meal are withdrawn until the stomach is empty. If 200 c. c. are recovered, it speaks for retention. This is strengthened by finding of bits of raisins and rice.

All cases are fluoroscoped and plated. Fifty to sixty patients are studied every afternoon. Only 15 per cent of the cases are diagnosed as organic in nature with a definite pathology. The 15 per cent with organic disease represent the far advanced cases, with marked pathological development, for which there is hardly a need for the x-ray. Assuming that 50 per cent of the cases were sent as a matter of routine, there still remained 35 per cent which presented definite clinical signs and might have been overlooked for lack of time to study them. Patients have been brought to the operating room with diagnosis of duodenal ulcer but upon exploration several gastric ulcers were found which had been missed by the x-ray.

Fluoroscopic examination is considered at this clinic of the greatest importance. A definite diagnosis is based, first, on the x-ray; second, on the history; and third, on chemistry. History should always be first, the x-ray second, and chemistry third. The Mayos uphold the surgical treatment of gastric and duodenal lesions. The



younger men admit that certain cases are amenable to medical procedures.

All the stomach cancers operated upon and seen by the author were inoperable. This was very discouraging. They do wonderful work in intestinal cancer. The slightest pain in the abdomen with mucous or bloody stool is thoroughly investigated by proctoscopic and sigmoidoscopical examination, as well as x-ray, and thus they are able to discover the earliest manifestation of malignant changes. Wonderful results follow their resections.

*The Sippy Method.*—Sippy does not lay claim to an ulcer cure, but terms his method ulcer management. He keeps his patients from two to four weeks in the hospital and gets his information by a system of gastric aspirations, such as: (1) Secretory; (2) therapeutic; (3) control; and (4) motor aspiration. If patients are not benefited by alkalization, he doubts the existence of an ulcer. If relief results from an enema, he suspects intestinal irritation as the cause of the stomach symptoms. The enema is also a diagnostic procedure with him. It is given a quart at a time at short intervals. If by gradual distention of the intestines pain is aroused, and when expelled pain disappears then the condition might be intestinal. If no effect is produced by the enema, then the pain is gastric in origin.

Sippy has elaborated a complex system of dietetic treatment for gastric and intestinal conditions, especially ulcers. He starts his ulcer management by giving half of a glass of sweet cream and milk every two hours, and a powder of calcium carbonate or magnesium oxid in combination with sodium bicarbonate. The cream and the powders alternate. This is kept up for four days. On the fifth day one feeding is added and consists of an egg. The nonmilk feedings are increased to six a day, and they comprise nonirritating and bland foods, rich in fat and protein. The increased fat in the stomach coats the gastric mucosa and thus lessens irritation. His belief is that the acid secretion is the cause of the pain.

Chronic diarrhea is often treated by diet, but opium is frequently used in this condition, so the formed stools cannot be due to his diet alone, which he asserts to be the case. His claims are greatly exaggerated, since in thirty per cent of these cases cancer develops. Sippy's aversion to abdominal surgery has come at the psychological moment because patients have been operated upon without relief from the symptoms that led to operation. Sippy swung the pendulum to

the other extreme, asserting that ulcers should be treated medically. He does not believe in the newer advances in diagnostic procedure. He uses the x-ray only for confirmative purposes.

*Boston Clinics.*—At the Peter Bent Brigham Hospital Dr. McClure was treating his gastro-intestinal patients with psychotherapy. He was doing it for experimental purposes. He was trying to find out what part physical and nervous fatigue, as well as mental strain, played in the production of gastric symptoms. In so many cases patients had been operated upon for chronic appendicitis and even for ulcer with no relief. All that they do is to try to restore the patient's confidence in his own stomach by assuring him, after a careful physical examination, that there is nothing wrong and instructing him to eat plenty of nourishing food and at the same time to build up his morale. They relieve him of his worry; if fatigued, they send him to a convalescent home; if he has financial and family friction, they send a social worker to smooth them out; if he has bad teeth, they urge him to have them attended to. In this way they succeed in building up the individual and curing him of gastric trouble. While this clinic has been conducted only six months, many patients have been restored to normal digestive activity.

In the general medical clinic many patients give as their chief complaint gastric symptoms of various degrees of severity, but after routine examination are found suffering from tuberculosis, heart disease, or other nongastric conditions. A good gastroenterologist must be a first class internist.

*Conclusions.*—As regards organic disease of the stomach and its adnexa, infection and intoxication play the most important rôle; infection takes place as a result of infections in the mouth, respiratory tract, appendix and elsewhere, as primary foci; the seat of intoxication is in stasis of the intestinal tract; disturbances of the autonomic nervous system produce many gastric conditions simulating organic disease; the diagnosis should be based on a thorough study of the individual from the points of view outlined above. Medical treatment properly applied, even in organic disease, is more efficient in early cases than surgery; chronicity of ulcers is produced by lack of proper treatment in early stages; when properly managed by dietetic régime and frequently gauged by the fluoroscopic screen, the degree of improvement can be studied to better advantage.

J. ROSE.



GARDINER, F.: **Statistical Survey of Tuberculosis of the Skin.** *Edinburgh Medical Journal*, 1921, xxvi, 374-379.

The question of tuberculosis of the skin is to a great extent that of tuberculosis generally. The cases of a surface lesion becoming infected with tubercle bacilli is simple, as in the postmortem wart, but even in the case of local injury it is quite possible that the lowering of the vitality of the part by the injury will produce a suitable nidus for growth of the tubercle bacillus which is in the circulation or the lymphatics. With regard to cases of direct external infection, 18 males and 5 females give a history of previous injury. With these we may well associate the 4 cases in males where the disease is reported to have followed vaccination. Apart from the vaccination these male cases occur up to thirty years of age, and we may explain the greater frequency in males by the greater activity and liability to injury of the sex. It follows then that apart from the prevention of infection in a local wound the main point is the provision of healthy mucous membrane.

KORB, P.: **The Treatment of Flatulence with Egestogen** (Zur Behandlung der Flatulenz mit Egestogen). *Medizinische Klinik*, 1921, xvii, 167.

Pharmacologists have recently formed the opinion that phenolphthalein for internal use should be taken only with the greatest care, for this reason the manufacturer has substituted 4 per cent magnesium carbonate for the phenolphthalein in order to paralyze the retarding action of calcium carbonate.

The new composition of the medicament appears favorable and its indication will probably be doubled, because its calcium components besides their cathartic action, can help to make up any calcium deficit of the body. The author has used this preparation for many months as a treatment, which by its energetic influence on the acid fermentation of intestinal contents with annoying gas-bloating of the intestine, also on catarrh of the large intestine, intestinal spasms and other neuroses of the intestine, showed very clearly a curing influence.

The number of cases treated was 30, most of whom at least so long as they took the treatment, remained free from discomfort. There

appeared no shrinkage of the appetite or obstipation; on the contrary the appetite seemed to increase. As a purely symptomatic treatment, egestogen gives good service in all cases, in which the intestinal content shows an acid reaction from fermentation processes, in which abdominal collections of gas in the intestine cause pain and in which disturbances in the intestine in its different sections are brought about by the unsuitable foods. Likewise the calcium-magnesium content serves to improve the condition of nourishment of the body. That a permanent cure is brought about by egestogen only under particularly favorable circumstances, is true, but not important as the patient is usually much pleased to find a means with which to combat the unpleasant flatulence.

AYMARD, J. L.: **Harelip and Cleft Palate; a War Influence.** *British Medical Journal*, September 10, 1921, 405.

The author states that war experience showed him that no tissues need be sacrificed. The mucous border need not always be completely detached, but can almost invariably be incorporated into a useful backing support, helping to give that prominence to the upper lip which is essential to success. The author restores the usually lost philtrum by the insertion of small strips of septal cartilage. The author closes the harelip first.

The worst enemies of the plastic surgeon are sepsia, insufficient blood supply and tension. The Langenbeck operation exposes four raw surfaces to infection. Lane's operation gets over the difficulty by opposing raw surfaces, and for this reason the plastic principles are correct. The author attempted to support tissues with mass paraffin, but failed. His present method is based upon Esser's principle. In one case he made small incisions in the usual position internal to the last tooth and carefully freed the hard and soft palate with blunt forceps. A pocket was thus formed on both sides, which was then plugged with gauze. Two almond shaped plugs were cut from a mass of wax, consisting of paraffin 1 oz., bees wax 2 drams, iodoform 1 grain, bismuth carbonate 2 grains. Two large Thiersch grafts were next cut from the inside of each thigh, approximately 2 in. by 1 in. Each graft was then spread over its wax cone and held in position with medium sized Kocher forceps. The edges of the



pocket were held open by an assistant, and having removed the gauze the graft covered wax was dropped into each cavity and secured with one suture. The insertion of the wax practically closed the cleft and made the parts unmovable. After fourteen days the cleft border was incised, the wax removed and the raw edges sutured. The patient made an uneventful recovery and speech was very greatly improved. Full feeding was permissible from the first and no attempt was made by Nature to expel the graft covered foreign body. This operation was performed upon a boy of 12 years, but could be done on a child of 2 years. There appears to be little or nothing to be gained by operating at an earlier age and much to be lost.

LONDON, A. A., AND NEWLAND, H. S.: **Extroversion of the Bladder. The Sequel to Two Cases.** *Medical Journal of Australia*, August 6, 1921, ii, No. 6, p. 103.

These cases were reported in 1906, though they had been operated on sometime previously. Both have recently died and the post-mortem findings are hereby given.

**CASE I.**—Male. Lived 21 years after operation. During the last ten years he had had occasional illnesses, with chills, vomiting, pains in the back, and occasional diarrhea, which was attributed to a pyelitis as there was tenderness over the right kidney. An attack of influenza two years before death further debilitated him, finally leading to his death.

*Postmortem Examination.*—The bladder was replaced by scar tissue; the left kidney, with its ureter, was embedded in fat throughout. Very difficult to trace the ureter. The kidney was shrunken and had a wasted cortex with dilated calyces, filled with greenish gray putty-like material. The ureter was 21 cm. in length with varying caliber. Its site was easily found in the rectum by a small polypoid projection.

The right kidney was a complete contrast; capsule peeled readily, cortex measured 4 mm. Some dilatation of the calyces. These were filled with semipurulent material with characteristic odor of bacillus coli communis. Its ureter was slightly dilated throughout, with a gaping orifice (5 mm.) where it opened into the rectum.

**CASE II.**—Male. Lived 17 years after operation with very few illnesses up to a year before death, when he suffered from cough and

indigestion, with occasional trouble of holding the urine in the rectum. Apparently died from terminal pneumonia. Autopsy was not performed.

The gall-bladder is a diverticulum with narrow neck, average diameter of cystic duct, about  $\frac{1}{8}$  in., and is a diverticulum in which stagnation may readily occur. In its normal content, bile and mucus, most types of micoorganisms can be cultivated, the sources of infection being the portal circulation. Under conditions of health bacteria carried to the liver from the alimentary canal and other abdominal viscera, are destroyed there, or attenuated so as to be innocuous. Under pathological conditions this process is subnormal. When infection of bile channels occur, the gall-bladder is the site where they tend to persist, one result being the formation of gall-stones. The infection depends upon the relative proportion of cholesterin and bile salts. Cholesterin is insoluble in water, but soluble in solution of bile salts, and when these are insufficient, cholesterin is thrown off in increased quantity from tissues undergoing pathological change and concretion formation is the result. The problem in the treatment of cholecystitis is to arrest infection.

The test of a successful operation for cholecystitis is whether the infection of the bile channels clears up, return of liver function to normal, whether the patient is free from symptoms referable adhesions or other symptoms from recurrent inflammatory reaction in the operated area. In the author's experience a considerable proportion of cases of cholecystitis treated by drainage fail to pass this test. Admitted that when gall-stones are associated with cholecystitis a return of concretions is unusual when cholecystostomy is performed, yet a considerable number of patients so treated suffer ill health referable to persistence of the gall-bladder as a center of infection. In order to avoid complications and thus be relieved of this source of infection, it appears advisable to remove a gall-bladder attacked by cholecystitis. In some proportion of cases, in view of the age or feebleness, it may be better to limit the procedure to cholecystostomy after removal of calculi. With these exceptions cholecystectomy should be the rule in acute, subacute and chronic cases, and it is necessary to make certain that no obstruction remains in the hepatic and common ducts. If this is demonstrated beyond doubt, there is no need even in cases of jaundice to provide external drainage in an associated pancreatitis.



Patients who have had the gall-bladder removed do not suffer any demonstrable disadvantage. In cases of calculous cholecystitis they are relieved of the double risk of the reformation of stones and the persistence of bile duct infection. In cases of cholecystitis without calculi they are relieved of a diverticulum which would in all probability prove the source of a recrudescence of intoxication. An operation field which permits of a proper examination of the bile ducts is adequate for cholecystectomy. An operation may present considerable difficulties when the gall-bladder is shrunken and lies embedded in adhesions. It is in this connection that its removal is most necessary if recurrent attacks of infection are to be avoided. Under other circumstances its removal is simple. The raw surface left can often be obliterated by suture, or sometimes

If it is true that the gall-bladder is of no particular functional value in the human subject, says the author, that it is the nidus of persistent infection in the biliary channels, that its removal is not a more serious operative risk than cholecystostomy, the argument for cholecystectomy as the normal operation in cholecystitis is overwhelming.

**MONSARRAT, K. W.:** **Remarks on the Indications for Cholecystectomy.**  
*British Medical Journal*, March 12, 1921, No. 3141, 371.

With regard to the operation for the removal of the gall-bladder in cases of cholecystitis, Monsarrat calls attention to one writer who says, in speaking of cholecystostomy, "This operation saves this valuable organ for future function," whereas in another article the same writer remarks, "Practically all cases of cholecystitis and 80 per cent of cases of gall-stone disease should be treated by cholecystectomy." A recent text-book also speaks of the divergence of opinions on this subject, and the question must be considered from physiological, pathological, and clinical standpoints. The first has to do with the functional value of the gall-bladder. It is not universally found among mammals; the solipeds and horse are without it. The horse has a single ductus choledochus which opens into the duodenum by way of the ampulla of Vater; the ox, the pig, the dog, and the cat possess it. Physiologists are practically silent as to its function, but up to recent years it was thought that by periodic contractions it filled the duo-

denum with bile when food passed from the stomach. It has been pointed out that the amount of bile excreted in the human subject is from 30 to 50 ounces in twenty-four hours, and as the capacity of the gall-bladder is but one ounce, it can hardly be considered a reservoir. W. J. Mayo's theory is that the gall-bladder takes the tension off the common and hepatic ducts, and that the mucus it produces lessens the chances of pancreatic and other complications,—the safety-valve theory. With this the author does not quite agree. He says in the horse, possessing no gall-bladder, subacute pancreatitis has been described only as a consequence of the penetration of foreign bodies.

WELCHMAN, W., AND PIRIE, J. H. H.: A South African Case of Myceloma ("Madura Foot") Caused by "Nocardia Indica" (*Discomyces Maduræ*). *Medical Journal South Africa*, 1921, xvii, 6-9.

The patient whose case is reported is a male African native, aged about 66. He complained of inability to use his right leg owing to the enormous swelling of the foot. The duration was said to be nine months, but probably was longer. There was no complaint of pain or tenderness. The swelling extended slightly above the ankle joint. There was no apparent increase in length, but a great increase in thickness from dorsum to sole; the plantar surface presented a convexity instead of the normal concavity of the arch. The dimensions from side to side were also increased, and the ordinary bony landmarks were lost owing to the thickening of the tissues. From the dorsum, sides and to a lesser extent, the sole, a number of nodules projected on some of these the skin was intact, whilst others presented the openings of sinuses—the openings being either obvious or hidden amongst pale, dirty-looking granulations. A somewhat oily-looking seropurulent discharge issued from those sinuses. Granules of a creamy white or faintly yellowish tint were visible in the discharge, and microscopic examination of these showed the presence of abundant filaments of an organism of the genus *Nocardia* (*Discomyces*). The patient also presented a swelling of considerable size in the region of the sublingual glands on the side of the affected foot, and a small discharging sinus over one of the glands. His temperature was normal. An x-ray examination disclosed marked rarefaction of all the bones of the foot. Amputation was performed and at the same time



some of the enlarged glands and the sinus in the groin were excised. The stump, which at first healed nicely, began later to show signs of breaking down, and the discharge showed appearances similar to those of the discharge from the original sinuses in the foot. The patient was now given full doses of potassium iodid, but without appreciable result. Two intravenous injections of novarsenobenzol (0.45 and 0.6 grams respectively) were then given at an interval of one week. Under the influence of the latter drug the discharge rapidly disappeared and the stump healed up completely.

The foot was examined and the cut surface revealed the presence of a series of ramifying cyst-like cavities, channels, and sinuses, such as is described by all writers as characteristic of the typical disease. These channels contained viscid material with abundant soft granules of a faint yellowish tint and composed mainly of mycelial threads. The cyst-like cavities were lined by a membrane of a similar color and around this in some of them was a dense fibrous capsule, which in places was pigmented orange. Muscle, cellular tissues, joints and bones were all involved. Microscopic sections of the affected tissues showed the fungal masses to be present, a mycelial plexus with a more or less regular radial arrangement, and non-staining necrotic material, especially in the center of the masses—and around these masses granulomatous tissue with endothelial and plasma-cells, much in evidence had been deposited. Giant cells, which are generally noted as being frequent, were not apparent. Around these masses and granulomatous areas was as a rule a wall of fibrous tissue. In sections of the mass from the groin which appeared to be a single and much enlarged lymphatic node with considerable increase in the amount of its fibrous stroma, the fungal masses were seen to lie amongst lymphoid tissue and showed a marked infiltration by endothelial cells. A prominent feature of sections both from the foot and the groin, and one which is noted by practically all writers, was the proliferation and swelling of the endothelial cells of the capillaries, and the endarteritis and periarteritis affecting the arterioles. Anaerobically, no growth occurred either on agar or in broth, and cultures were readily obtained on almost any medium. Growth was most luxuriant at 37° C. (98.6° F.) but still occurred at 22° C. (71.6° F.) although poorly. The spread of the causative organism beyond the limits of the foot is very uncommon.

MILLS, H. B.: **Prognosis and Treatment of Scarlet Fever.** *The Therapeutic Gazette*, May 15, 1921, xlv, No. 9, p. 322.

The value of antistreptococcic serum is doubted, and its use is limited, says Mills. There are certainly several conditions where one would not use the serum:

- (1) In cases with very high temperature.
- (2) In very young infants or patients who are greatly exhausted from the effects of the disease.

If indicated, he says, use 20 to 40 c. c. every four to six hours. The prophylactic dose to the others is 10 c. c., but a single inoculation does not confer immunity; and immunity, when present, does not last over six months.

DAVIS, E. G.: **The Significance of Hematuria.** *Journal of the Iowa State Medical Society*, 1921, xi, p. 315.

Blood in the urine is an indication of a pathological condition of some portion of the urinary tract and is a symptom requiring investigation.

"Kretschmer, in an analysis of 238 cases, showed that the vast majority were due to three courses: tumor, tuberculosis and stone, the relative frequency being in the order named. Fifty per cent of the entire series was due to tumor involving any portion of the urinary tract. Excluding such cases as nephritis, trauma, and urethritis it is then within reason to consider that the underlying cause is a new growth involving some portion of the urinary tract. To overlook this warning, is to miss rendering a service at a time when treatment could be beneficial. Out of a series of 41 cases 29 were either cured or distinctly improved by thorough investigation and appropriate treatment.

The chief causes may be classified as follows:

1. Symptomless hematuria.
2. Hematuria with renal colic.
3. Hematuria with bladder symptoms.

In a given case of symptomless hematuria the cause will usually be one of four conditions, papilloma, hypernephroma, pyelitis, or "essential" hematuria. Papilloma, almost always the sole symptom



is intermittent hematuria. Cystoscopic examination reveals one or more small, delicate, arborescent growths springing from the mucosa, usually in the region of the urethral orifices. The treatment is fulguration with high frequency current through the ordinary cystoscope, without anesthesia. If benign, papillomata disappear with marvelous rapidity and completeness. After surgical interference these tumors have a tendency to implant themselves upon other portions of the bladder wall. Some authors find radium is a valuable aid.

*Hypernephroma.*—Early diagnosis must be based upon hematuria and a differentiation in the functional ability of the two kidneys, as determined by ureteral catheterization and the phenolsulphonephthalein test. X-ray is sometimes of value in showing the tumor or in demonstrating metastases in the lungs.

*Pyelitis.*—The hematuria may be usually controlled by injections of silver nitrate into the renal pelvis.

*"Essential" Hematuria.*—This should be termed "unexplained" and is in reality an evidence of our limitations in diagnosis. Hematuria with renal colic usually means ureteral calculus, the diagnosis may be made by the passage of a wax-tipped ureteral catheter. Simple insertion of a ureteral catheter will often be followed by the descent of the calculus.

Hematuria with bladder symptoms include the cases in which there is frequent difficult or painful urination. The diagnosis in by far the greater majority of patients presenting this symptom-complex will be one of carcinoma, stone or tuberculosis.

In view of the high percentage of tumor as the underlying cause of blood in the urine, extensive publicity might well be given to the significance of hematuria.

SMITH, A. L.: *Etiology, Treatment and Results in 100 Cases of Backache.* *Nebraska State Medical Journal*, June, 1921, vi, p. 179.

In 100 cases without history of accident or trauma complaining of backache, thorough examination has been made taking into consideration every part of the body, 66 cases are due to pelvic and genito-urinary pathology and only 11 are abnormal back conditions.

In 100 cases in which backache was the prominent symptom,

diagnosis of sacro-iliac strain, flat feet, tabes, malingering, injury to soft tissue of back, cystocele and rectocele, pyelitis, pyelonephritis. Perinephric abscess, pendulous abdominal wall, acute hemorrhagic nephritis, spinal cord tumor and meningitis, nephrolithiasis, cholelithiasis, hemorrhoids, neurasthenia, hypertrophied prostate, ectopic pregnancy, tubal and ovarian disease, uterine fibroids, non-potent vaginal canal, incarcerated pregnant uterus, prolapsed uterus, malposition of uterus, cystitis, carcinoma of ilium and pyelitis, hypernephroma, and sarcoma of ilium was made. Only 11 showed pathology in back region and in 89 the pain was referred to the back from abdominal conditions in other body areas.

It is necessary to have a complete examination and then removal of the etiological factor and local therapy should not be attempted until the entire body has been examined and a proper diagnosis made.

GARR, C. C.: **Abduction Treatment of Fracture of the Surgical Neck of Femur.** *Kentucky Medical Journal*, 1921, xix, p. 170.

"I am one of those who ten years ago believed in Buck's extension and now meet with a blush of regret the self same patient treated in such manner. It is stated that of 120 cases of ununited fracture of the neck of the femur treated at Mayo clinic not one had had the proper treatment at the time of injury."

For treatment, "a Hawley table is desirable but not essential; a frame made from gas pipe is as efficacious. The patient is anesthetized and placed on the gas pipe frame or on a spica box with a perineal bar. The sound leg is abducted first to determine the limit of abduction. Extension is then made on the injured leg in the line of the body and the leg rotated to the median line. After extension, has been made the limb is abducted to the same angle as the well leg with the internal rotation and extension maintained by an assistant all the while. In this position plaster of paris is applied to the well padded body from the nipple line to and including the foot, the plaster should be reinforced with plaster splints, or steel bars over the hip joint; the point most apt to crack. This is left on eight to twelve weeks and then massage and gentle movement of the joints, hip and knee are instituted. The patient can then get about in a wheel chair and on crutches. Weight bearing on the injured leg should not be



begun under five months in older people and it is usually a year before the crutch or cane is entirely discarded. The comparison of results obtained by the method here described is overwhelmingly in favor of these treatments and I wonder why it is not of universal use."

SMITH, R. R.: **Carcinoma of Rectum and Sigmoid.** *Journal Michigan State Medical Society*, 1921, xx, p. 1.

Carcinoma of the rectum itself rarely produces obstruction, even in the later stages, whereas it is an early symptom when higher up. Bleeding is usually the first symptom and since it is common with hemorrhoids its significance is often overlooked. A slight degree of discomfort is usually present. "Bleeding from the rectum always demands an examination".

In carcinoma of the sigmoid the first symptom is usually obstruction. Slight cramp-like pain in the abdomen constantly or frequently should call for an examination. Diarrhea is an interesting symptom, especially in the morning. Blood and discharge are fairly late symptoms.

During examination any growth or induration in the wall of the rectum can usually be detected. If there is a growth in the sigmoid at or near its junction with the rectum, it can usually be made out with ease. "The feel like a cervix protruding into the rectum is familiar to us all, is almost pathognomonic and almost always present where the growth is at this point". For further examination place the patient in the knee-chest position. One requires only two tubal rectal speculums, one short, 3 inches in length, for inspection of parts just within the anus, and the other about 6 inches in length, for inspection of the upper rectum and lower sigmoid. A good head-light and a pair of long dressing forceps are the only other instruments required. If we fail to reveal the trouble the next step is the use of x-ray by a well trained man. A mixture of barium injected into the rectum and followed with the eye on the screen, is a satisfactory method of detecting stricture of the lower colon and even higher up. Distinct signs of stricture must be regarded with suspicion.

If the growth is at the anal opening and lower than the internal

sphincter, a rare condition, the removal of all the lower end of the rectum with the adjacent skin and the inguinal glands on both sides is the operation of choice.

"When the growth is at the recto-sigmoidal juncture the preservation of the lower end of the rectum with the natural anus is allowable and the choice of a number of procedures is open to the surgeon".

"When the growth is well up in the sigmoid and the same can be freed and brought through the incision, an ideal procedure, as far as safety goes, is to unite the upper and lower limbs of the bowel by suture, close the abdomen leaving the growth protruding from it and remove it with the scissors in a week or ten days—a long forceps is then passed into the bowel, one blade in either limb and clamped, the forceps are removed. The intervening portion between the two limbs sloughs giving free an anastomosis and the abdominal opening closes spontaneously or may be closed by simple operation if need be. When the growth cannot be brought through the wall, an end to end anastomosis may commonly be done.

KILLIAN, J. A.: **A Note on the Blood Chlorids in Mercuric Chlorid Nephrosis.** *The Journal of Laboratory and Clinical Medicine*, December, 1921, vii, No. 3, p. 129.

It is significant that in mercuric chlorid nephrosis, despite the severe impairment of renal function indicated by the marked retention of the nitrogenous waste products, edema is generally absent. In other types of nephrosis, anasarca usually develops consequent to an impairment of chlorid secretion.

The object of the present communication is to present the results of observations on two nonfatal cases of mercurial poisoning. These studies comprise analysis of the blood for urea nitrogen, uric acid, creatinin (chlorids of the whole blood), sugar, and the carbon dioxid combining power. The total fluid intake and output were measured each day, and the stomach washings and specimens of urine were examined for mercury, until these tests proved the absence of the metal. Significant clinical changes were also noted.

Both cases showed evidence of severe nitrogenous retention. It was worthy of note that the uric acid decrease preceded the drop of both the urea nitrogen and the creatinin. Special importance was



laid upon the chlorid of the whole blood, and the authors took as the normal chlorid 0.45 to 0.52 per cent. In one of the cases a decrease in the blood chlorids from 0.495 to 0.114 per cent within the first eight days of treatment, but the nitrogenous constituents, however, rose to their maximum concentration. During this period the patient was receiving a total of 4 to 5 liters of alkaline fluids containing no chlorids. For the succeeding eight days a hypodermoclysis of 1000 c. c. of 0.7 per cent sodium chlorid solution was given daily. There followed a gradual rise in the concentration of blood chlorids to 0.525 per cent. Simultaneous with this increase in the chlorid, there is a diminution of the nitrogenous constituents of the blood, keeping pace with the observed clinical improvement. The other case acted very similarly. It seemed to the author that the diminished excretion of chlorids must be ascribed to a decrease of the blood chlorids below the threshold point, and with a rise of the chlorids the amount excreted in the urine proportionately increases. The mechanism of chlorid retention with a simultaneous decrease of the chlorid concentration in the blood in mercuric chlorid nephrosis is at the present time an obscure point.

At the time of greatest impairment of kidney function, there was observed a marked decrease in the carbon dioxid combining power of the blood plasma. In Case I the carbon dioxid combining power dropped to 27, and in case 2 to 25 volumes per cent. A rise in alkali reserve of the blood-plasma in the first instance followed the use of alkaline fluids, in gastric lavage, colonic irrigations and enemas. This rise accompanied the improvement in renal function.

C. M. ANDERSON.

LANGLEY, G. J.: **Aortic Incompetence.** *Lancet*, December 10, 1921, col, p. 1209.

Four hundred heart cases were studied. Fifty of these were examples of aortic incompetency. This percentage of  $12\frac{1}{2}$  is lower than the statistics of most observers. The average age of these patients was 38 years. The youngest was 21 and the oldest 67; 5 cases occurred in women; 40 of the patients were married. The causes were classified as follows:

- (1) Injury with rupture of a valve segment—1 case.

(2) Rheumatism—21 cases; 2 of these gave a history of scarlet fever.

(3) Sixteen cases gave a positive Wassermann test.

(4) Twelve cases had arteriosclerosis.

(5) Infections subacute endocarditis—5 cases.

Of symptoms 26 had pain; 2 had anginal attacks; all cases had some form of dyspnea; 21 had orthopnea; almost all cases had a cough. Vertigo was constant symptom; pallor 30 cases; clubbing of the fingers in 10; Flint murmur in 16; Corrigan pulse in 35; average pulse pressure 85.

H. JOACHIM.

PETERSON, A.: **Involvement of the Genito-urinary Tract Associated with Active Pulmonary Tuberculosis.** *California State Journal of Medicine*, Jan., 1921, xix, 18.

The author's material consisted of members of the army who were kept under observation for some length of time on the basis of some pulmonary infection, during demobilization. Clinically, he only demonstrated five cases of surgical tuberculosis of the kidney, three of which had active lung involvement.

During eleven months of service at Fort Bayard, the author had a patient population between 800 and 2,000. Eighty per cent of the cases had active pulmonary tuberculosis; usually about 250 patients with far advanced lesions were cared for in the infirmaries.

One patient had bilateral renal tuberculosis, and one unilateral renal tuberculosis and tuberculous epididymitis with no active pulmonary lesions. One patient had bilateral involvement, and in one an acute abscess developed destroying both the epididymitis and testicle. A castration was done and the wound healed in three weeks. Two months later the patient died from an acute tubercular pneumonia. At autopsy the kidneys were free from tuberculous invasion. The prostate showed a caseated abscess and there was cold abscess at the stump of the cord following the castration.

Old types of lesions were found at autopsy. Lung lesions were always found. Old multiple cavities, filled with pus, cheesy material and necrotic tissue. Now and then they were associated with a fresh general miliary distribution, into the lung tissue, the peritone-



um, and abdominal viscera. All these severe cases were highly toxic for weeks and months previous to death. Certainly the eliminating structures, such as the kidneys, were overburdened with toxic substances. Bacilli were found in the lymph streams.

"Except in cases where acute miliary tuberculosis was the immediate cause of death, the genito-urinary tract was rarely involved in the infection, and here the lungs showed old massive lesions while the lesions in the kidneys were of the young and miliary type."

Genito-urinary tuberculosis is agreed, uniformly, by all authorities, to be secondary to foci in other organs of the body. The primary lesion is often seen in the lungs. Tuberculosis of the lymph glands may be quiescent for years and then become active, causing secondary infection of other organs. This fact is often difficult to demonstrate.

Braasch, of the Mayo Clinic, reviews a large number of cases of surgical tuberculosis of the kidneys, and found that five per cent had active pulmonary lesions, (personal communication). Paterson (*Tice's Practice of Medicine*, Vol. II, page 464) states that tuberculosis of the kidney is probably a less common complication of pulmonary tuberculosis than vice versa. Clinically, renal tuberculosis is found very seldom in pulmonary cases. Paterson agrees that renal infection usually occurs in the form of miliary tuberculosis, which gives no symptoms during life. Nephritis occurs among tuberculous patients, as often as among non-tuberculous patients. Paterson says that albuminuria does not mean tuberculosis of the kidneys. Tuberculosis of the kidney, according to Thompson, forms 10 per cent of tuberculous infection. Acute nephritis, parenchymatous, intestinal nephritis, and waxy disease of the kidney, have been observed in tuberculous patients. These are the results of the toxin of the tubercle bacillus.

The author's pre-war experience was that tuberculous of the genito-urinary tract was not often associated with the pulmonary. The mode of invasion is either through a massive, fresh exposure to the tubercle bacillus, living with people with active tuberculosis, or by a breaking down of the foci already existing in the lymphatic glands. "Thus tuberculosis of the lung might well be considered secondary." The author thinks that genito-urinary tuberculosis is much oftener primary than it has been so far believed.

MAHR, E. F.: **Studies in the Serology of Syphilis. Syphilitic Color-indices.** *The Journal of Laboratory and Clinical Medicine*, October, 1921, v, No. 7, p. 1.

The author describes a method of reporting the serology of syphilis by a color index, using a colorimeter scale in reporting the degree of the reaction. His conclusions were as follows:

The colorimetric scale makes it possible to determine with fair accuracy the finer gradations in the degree of syphilitic infection. Indices from 1 to 4 inclusive, for example, cannot be regarded other than "4-plus" by the regular Wassermann reaction. Doubtful readings, such as "plus-minus, 1-plus, and 2-plus" are given a definite designation and are determined with greater certainty by the use of the color scale, and the personal equation of the observer is practically eliminated. In the case of subjects under antisyphilitic treatment, the recognition of a slight drop toward the negative is possible with the use of the color scale. Slight increase in the positive side are recognizable in the same manner. With paretic spinal fluid it is seen that the syphilitic index approaches the reading "0" in proportion as the colloidal gold reaction shows a definite paretic curve, whereas the routine Wassermann reaction will give simply a "4-plus" reading whether the curve is a strong paretic type or not. The syphilitic zone of gold curve predominates in the region of indices from "6" to "8", and the paretic type in the region from "6" to "0".

Colorimetric readings make possible the recording of the laboratory history of syphilis for each patient upon a graphic chart, giving a clear representation of the progress of cases under treatment.

C. M. ANDERSON.

PALMER, G. T.: **Ventilation, Weather, and the Common Cold.** *The Journal of Laboratory and Clinical Medicine*, October, 1921, v, No. 7, p. 39.

From the results of this study there appears to be something inherent in the indirect method of ventilating schoolrooms by means of forced draught and gravity exhaust, as practised in this study, that is productive of respiratory affections, something that is not present in rooms ventilated with windows and gravity exhaust. What



these unfavorable elements are is not entirely clear. Higher temperature is one. Uniformity of temperature and air flow is another. Uniformity is characteristic of the fan ventilated room. In an unvarying atmosphere the occupants miss that pleasant stimulating effect. Evidently the absence of this quality affects health adversely as well as comfort.

The temperature of window ventilated rooms may be reduced as low as 59 degrees without increasing the prevalence of colds.

It must not be inferred that window ventilation is represented in this study as uniformly satisfactory. It was not. As a rule the rooms exposed on the east do not fare as well as the others. Ample exhaust openings are better than those of small area. There is the matter of location of outlets with respect to the window, location, size and control of direct radiation, window deflectors, etc., which affect the success of window ventilation. All of these factors must be studied.

Because window ventilation is practicable for the ordinary school-room, it does not follow that the assembly room, the theatre and other places seating several hundred people can also be dealt with in this manner. Each type of enclosure must be handled as a distinct problem. The factors, which above all others, promote health, comfort and efficiency are coolness and fluctuating air motion.

Respiratory affections increase with the onset of cold weather. They diminish with the advent of mild weather in the spring. Wind and humidity influence the temperature. Sunlight exerts at least a warming influence sufficient to modify the unfavorable effect of cold. Abrupt changes in temperature do not influence respiratory illness as much as one might expect from everyday experience.

C. M. ANDERSON.

**WHEELER, E. G.:** Report of a Case of Thrombosis of the Aorta and Iliac Arteries Following Pneumococcal Infection of the Umbilicus. *Canadian Medical Journal*, August, 1921, xi, No. 8, p. 532.

Case, full term male child, normal birth, breast fed for nine days, died on tenth day. Complaint on admission, legs turning black, and peeling of skin since birth, which occurred nine days previously.

Examination showed legs dark in color, bowel movements yellow-

ish green in color, skin over body scaling, temperature 98° F. Legs were turning black for 12 hours; death occurred on the tenth day.

Autopsy made seven hours after death showed peritoneum smooth and glistening, but slightly congested; lungs, many sub-pleural petechial hemorrhages; liver fatty, and where round ligament enters there was a pyramidal portion about the size of a walnut of darker red color.

On sectioning this, there was found in the center a thrombus in a medium sized vein which was traced back through the umbilical vein to the umbilicus. In the large and small intestines, there were many submucous petechial hemorrhages. The aorta was found to contain a thrombus which extended from a point about  $\frac{1}{4}$  of an inch below the origin of the inferior mesentery artery down to the bifurcation, into the right iliac artery and then into the right hypogastric artery to the umbilicus. The thrombus extended for a short distance into the left iliac artery.

The lumbar and iliac glands were enlarged and beefy red in color. Cultures taken from the peritoneum, umbilicus and heart's blood showed pneumococci in all tubes except that taken from the peritoneum, which was sterile. The lungs showed early broncho-pneumonia with sub-pleural hemorrhages. The liver showed congestion and fatty infiltration—evidence of a bacteremia.

But one similar case was found in the literature.

**EINHORN, M.: The Action of Various Salts and Other Substances on the Liver after Their Introduction into the Duodenum.** *New York Medical Journal*, September 17, 1921, cxiv, No. 5, p. 262.

The author has shown, as first stated by Lyon, that magnesium sulphate when injected into the duodenum, usually provoked a color reaction in the bile. The reaction takes place gradually, reaches an acme of color intensity (becoming very dark), then diminishes, returning to a light yellow. The dark bile did not appear real gall-bladder bile as Lyon assumed, for the following reasons:

(1) If the color change of the bile was due to the action of the magnesium sulphate on the gall-bladder causing an emptying of its contents, the change of color would necessarily be an abrupt one, beginning and ending sharply. This is not ordinarily the case.



(2) Magnesium sulphate which is believed by Meltzer to relax Oddi's sphincter and by Lyon to cause the emptying of the gall-bladder, would in this way have no direct effect on the character of the bile evacuated. Solutions of 25 per cent or 10 per cent of magnesium sulphate would, if the emptying of the gall-bladder is accomplished, furnish a bile of identical color and other qualities. This however, is not the case; the stronger the magnesium sulphate solution, the darker is the color and the higher the specific gravity of the bile, indicating that the magnesium sulphate has a direct influence on the bile itself.

(3) A great many other salts (which have no relaxing action) like sodium sulphate, and bicarbonate of soda, act in a manner similar to that of magnesium sulphate, effecting the color reaction named above. The latter must be due to the action of these ingredients on the liver and the bile production, and not to an evacuation of the gall-bladder contents.

(4) After applying the magnesium sulphate test, an immediate repetition of the test frequently provokes a reiteration of the same reaction with its entire series of color plays. If the dark bile would be gall-bladder bile, the reaction could not take place anew right after the gall-bladder had emptied its contents.

(5) Patients whose gall-bladders have been removed frequently give similar reactions after magnesium sulphate instillation, clearly showing that the gall-bladder as such, can have nothing to do with this phenomenon.

The author has repeated some of the given experiments. These studies have been amplified. Besides magnesium sulphate, sodium sulphate, sodium citrate and magnesium citrate, sodium bicarbonate, sodium chlorid, calomel, mercurochrome and other substances have been used. The method used was the same as that described in a former paper, instilling a 60 c. c. solution of the desired salt into the duodenum at blood temperature and then siphoning it back by gravity.

In 5 cases it was found that the specific gravity of the dark bile was increased, when the substance given had a high specific gravity (magnesium sulphate, glucose) and not increased when the substances ingested did not influence it, like peptone, calomel, atropin, pilocarpin, etc. All substances producing reaction (dark bile) do it whether the gall-bladder is present or not. Dr. Willy Meyer and

the author were able to furnish another positive proof that the dark bile need not come from the gall-bladder, but can be eliminated from the liver directly. The following instance demonstrated this very clearly:

A patient with cholecystitis was given magnesium sulphate on the day previous to operation. He gave a characteristic dark color bile reaction. At the operation (the duodenal tube had been left *in situ*) two important points were ascertained: (1) Magnesium sulphate was given through the tube: after waiting from five to ten minutes no dark was obtained. The gall-bladder which was exposed and constantly observed did not show any contractions; and (2) at the operation the cystic duct was found tightly closed by a stone so that nothing could leave or enter the gall-bladder. Moreover, after opening the latter, the contents were found to have a reddish appearance, consisting of pus and red blood corpuscles mixed with mucus, without any bile.

Inasmuch as there has been no bile in the gall-bladder and this condition must have existed for quite some time and inasmuch as nothing could enter or leave the vesicular cavity, the dark bile obtained the day previous could not have originated from this source and must of necessity have come from the liver ducts (choledochus).

The difference in the specific gravity of the dark bile after magnesium sulphate and that after bicarbonate of soda indicates that this process is not due to a mere release of concentrated bile from the bladder, but rather to a chemical action on the liver. Thus the higher concentration of the magnesium salt (25 per cent) caused an elimination of a bile of a higher specific gravity (1035) than bicarbonate of soda (8 to 9 per cent,—1020).

From experiences with different salts and chemicals when injected into the duodenum, it is apparent that the liver can be induced to a greater activity and to an elimination of a darker, more concentrated bile.

Lyon had suggested the employment of the magnesium sulphate instillation as a means of diagnosis in gall-bladder lesions and also for the differentiation of the different biles (from gall-bladder, common duct, and hepatic duct).

As shown in this paper Lyon's assumption of the different sources of bile, as judged by the color, does not seem to be correct.



The question arises what are the best conditions for the examination of the bile in gall-bladder lesions.

Since the magnesium sulphate and other liver stimulants increase the flow of bile from the liver and drive it quickly and directly into the duodenum, there will be after these substances a bile product from the liver direct containing very little if any bile from the gall-bladder. In the fasting condition and without any previous stimulation the aspiration succeeds in obtaining what little bile there is in the duodenum from the liver and the gall-bladder, or there seems to be more chance for the appearance of some gall-bladder bile when the flow of liver bile is not extensive.

Diagnostically, we can find many more valuable hints regarding gall-bladder lesions from the examination of the natural fasting bile than from the bile obtained after the stimulation by magnesium sulphate.

In cases of jaundice, in which no bile is found in the fasting state, a liver stimulant may be injected into the duodenum, in order to ascertain whether the increased flow of bile from the liver is still able to push through some of its products into the duodenum. In fact, in a number of such cases of chronic jaundice with no bile in the duodenum while fasting, the magnesium sulphate caused the appearance of some bile after a short time, thus showing that the common duct occlusion was not complete. In these cases the magnesium sulphate or peptone or glucose test is of diagnostic aid.

JULIAN ROSE.

SMITH, E. H.: *Treatment of Some Fractures of the Long Bones, Including Some Fractures of the Pelvis. Medical Record, 1921, c, 47.*

If we use a straight pull with the old time weight and pulley, we shall bring the limb down to normal length. When leg and thigh rotate outward, as they invariably do in fracture of the neck of the femur, the fractured parts are not separated in a parallel manner, but open up like a book. By strongly rotating the thigh and leg inward at the same time lifting forward on the great trochanter, the fracture may be brought into perfect apposition. A small sand bag about two-thirds the size of a brick and not too tightly stuffed, with a pad on top

of it should be placed behind the trochanter, then with big sand bags, one reaching from the level of the tenth rib to the bottom of the foot on the outer side, and the other from a few inches below the perineum to the bottom of the heel on the inner side, tied into place by strips of bandage, two below the knee and two above with a long thin pillow used as a pad to protect the bony prominences, and placed underneath the leg and thigh and brought up on the sides, so as to intervene between the sand bag and the limb. The upper end of the sand bag should be bound in place with an abdominal binder. A good quality moleskin adhesive plaster should be used to make traction. Spiral strips should be discarded, and the foot, leg and thigh should be bandaged with a flannelette bandage. The body can be raised and lowered, as moderate movement will not displace the fragments in a fracture dressed in this manner. It is vastly more comfortable than a plaster dressing could be.

Recovery with shortening scarcely to be demonstrated is the rule. Rotary displacement is avoided. Function of the hip joint will be from 50 to 70 per cent of the normal which is as good or better than when other methods are used.

JOHNSTON, W. H.: **Melanosarcoma of the Choroid.** *The Journal of the Iowa State Medical Society*, Sept., 1921, xi, 342.

Of the malignant neoplasms of the eye in adult life sarcoma occurs the most often. In all the pathological conditions affecting the entire eyeball, it occurs in from .03 to .06 per cent of all cases. It seems to show no preference for either eye. Most cases occur between the ages of thirty-one and sixty years. One author claims that sarcoma occurs more frequently in males than females. Injury is not important in its causation. The melanotic is more common than the non-pigmented type. Eighty-five per cent of uveal sarcomata are in the choroid. Statistics of Fuchs' and Pawel show that melanotic sarcoma of the choroid occurs six and one-half times more frequently than the non-pigmented variety. In the study of sixty-seven cases Kirshbaumer found that 13 per cent were melanotic, 40 per cent not pigmented and 40 per cent were pigmented with pigment derived from the blood. Of the sixty-seven cases only eight were of the true melanotic type. According to this, it would be said that



melanotic sarcoma of the choroid is rare. In the early stages the growth is mushroom shaped as it grows twice as fast laterally as it does in thickness. This author had three cases, all of whom were females between the ages of sixty-five and seventy-two years.

The tumors are vascular, hemorrhage into the eyeball is common, probably causing the glaucomatous symptoms which occur. The pigment of the cells may be formed by the cell or may come from the blood. The latter is close to the blood-vessels and the former at a distance. Some observers believe the pigment comes from the pigmented layer of the retina.

Injury has a minor rôle in causation. Fuchs' cases show 11 per cent that were traced to injury, others report injury as a cause in about 5 per cent of the cases. Leiplat reports a case of carcinoma of the choroid secondary to cancer of the breast.

The symptoms may be divided into three stages, the pre-glaucomatous, the glaucomatous, and the stage where the tumor has grown to such an extent that a part of it is outside the eyeball. The removal of the eyeball in this last stage offers a most grave prognosis.

In the first stage the patient complains of defective vision which progresses very rapidly due probably to small intraocular hemorrhages. The perimeter will show a scotoma which grows as the tumor does. The retina may or may not be attached to the tumor. Retinal detachment usually becomes complete, and if the lens remains clear the vessels may be seen. In the glaucomatous period the tension will be much increased due to hemorrhage, or to pressure of the tumor blocking the filtration angle. If the tumor is located anterior, these symptoms come on earlier. In some cases the pain from the iridocyclitis is very severe. The lens may become cataractous and render diagnosis difficult until the growth becomes extraocular, when there will be exophthalmos. Metastatic formation takes place in liver, lungs and stomach in order of frequency.

The first symptom is a disturbance of vision due to tumor formation, this may be seen with the ophthalmoscope unless it is located very far forward. Then the transilluminator of Wurdemann is useful. If the growth is located more posterior and below, the transilluminator of Hertz used in the mouth may be useful. One observer diagnosed a case by removal and examination of a small mass which was in the anterior chamber. Ries warns against any exploratory operations as they are apt to produce extraocular propaga-

tion or general metastases. He advises removal of all blind and painful eyes. Nineteen cases of sarcoma of phthysical eyes have been reported by thirteen different authors. The diagnosis is not simple and is often made after the eyeball has been enucleated.

If the eyeball is removed when the tumor is small the prognosis is good. A guarded prognosis should be given as tumor cells may be carried to some distant part of the body. Lilly reports a case of death from melanotic sarcoma of the liver eleven years after enucleation of the eyeball. Lediard reports a similar case three years after enucleation.

Treatment consists of enucleation of the eyeball as soon as diagnosis is made. If the tumor is extraocular the orbit should be exenterated.

In the past nine years this author has had three cases of sarcoma of the choroid. The first patient, a woman of sixty-five had loss of vision in left eye nine years previous to examination. She refused to have eye removed until two years later. She died six months later of metastases in the liver.

The second patient, a woman of seventy-two after two years of pain and failing vision had a mushroom shaped mass attached to the sclera back of the sclera-corneal junction. Retina was detached. Eyeball enucleated and patient still living.

The third patient, a woman of sixty-nine, had eyeball enucleated a year after the diagnosis of tumor of the choroid was made. She had no trouble, died three years later of pneumonia.

JEFFERSON, C. W.: **Fourth Venereal Disease.** *Kentucky Medical Journal*, Sept., 1921, xxix, No. 9, p. 586.

Spirochaetes and fusiform bacilli are never found in typical symbiotic association in other forms of balanoposthitis, although organisms of various types have been isolated from the excretions of such lesions. The disease in question owes its origin to dissociated action of these two organisms. Two forms of the disease are recognized, (a) the erosive or ulcerative type, and (b) the gangrenous type. The latter merely represents an advanced, usually untreated case of the former.

The organisms of the fourth venereal disease are identical to those



found in Vincent's angina, otherwise known as gangrenous stomatitis, cancrum oris, "trench mouth", etc. Both these organisms are anaërobic, and it may be that they represent different morphologic types of the same organism. The vibrio differs in several respects from the *treponema pallidum*.

The chief predisposing factors in the production of the disease are preputial redundancy, favoring uncleanness; phimosis favoring retention, and decomposition of smegma; moistening the labia with saliva; the practice of coitus oris.

*Symptoms.*—After a period of incubation of about five days there is an itching or burning sensation of the glands and preputial surface. Soon there is marked swelling, edema, and persistent phimosis, and the development of multiple, painful, ulcerated or eroded areas, which, when cleansed, are deep red in color, with punched-out appearance surrounded by whitish zones. The ulcers exude a yellowish white pus, which has a distinctive putrid odor.

Swelling, pain and edema are marked; inguinal adenitis is a common complication, which soon subsides after healing of the ulcers. Without treatment, gangrene may supervene, and the entire organ may be destroyed.

*Diagnosis.*—It was suggested by the appearance of the lesions, rapid progress of edema, the mal-odor of the excretions. It was confirmed by the finding of the organisms in the exuded material after staining with gentian violet.

Treatment consists of thoroughly cleansing the eroded areas with peroxide of hydrogen twice a day. No other treatment was applied. In simple cases this is sufficient to heal the ulcers at the end of 20 days.

In complete phimosis of any duration, a dorsal incision is required so as to uncover the tissues of the glands and prepuce. Then after thoroughly cleansing the ulcers with peroxide of hydrogen, the author applies cotton saturated with wine of ipecac, 1 ounce, Fowler's solution, 1 ounce, and glycerin, 1 ounce. Applied to the eroded areas and allowed to remain on for one hour. This treatment was used twice daily. In a severe case it required 30 days to completely heal the ulcers.

## SECTION ON LABORATORY AND RESEARCH

ANDREWES, F. W., AND NEAVE, S.: **The Nature and Systemic Position of the Bacillus Paratyphosus "C"**. *British Journal of Experimental Pathology*, August, 1921, cciv, p. 157.

The name *bacillus paratyphosus* "C" has been used to designate an organism found in epidemic disease in Eastern Europe and in Asia. The germ is readily recovered from the blood culture, and found after death in the spleen or other viscera. The serum of the patient showed characteristic agglutination of the organism. Evidently it is a bacillus of the paratyphoid group distinct from para "A" and "B".

Symptoms are varied, resembling sometimes a paratyphoid fever of short course, and at other times acute gastro-enteritis of dysentery; further they may show acute septic conditions. In still other cases symptoms are chiefly pulmonary, as a bronchitis or pneumonia. Intestinal ulceration, sometimes present, is often absent. The bacillus is seldom cultivated from the stools though not infrequently from the urine. The mortality, high in some outbreaks, is low in others. Two nonfatal cases have occurred in England since the war. Description of one of the cases is here appended:

*Case.*—Man, 25 years old. Returned in 1919 from Palestine. Previously had had an attack of amebic dysentery. Later in the year he had been laid up with an unexplained pyrexia for a week. Three months after reaching home in England, he became ill with what was diagnosed as influenza, and three days later this was complicated by pneumonia. On the twelfth day of the disease he seemed convalescent and was allowed to sit up. But three days later he had a chill with diarrhea, lasting three days. From then on he was somewhat febrile with occasional chills, when he came under the



care of the hospital. Examination showed extremely ill patient with irregular fever and chills; no abdominal symptoms, but obscure signs at the base of one lung, later shown to be a small pleural effusion. Blood examination showed in two tubes out of six a bacillus resembling bacillus paratyphosus "B", but inagglutinable with paratyphoid "B" serum. Further culture was identified by Dr. Schütze as the same as the Bagdad strains of paratyphoid "C". The feces were negative on bacteriologic examination. The urine contained a moderate amount of pus and yielded an abundant and pure growth of a bacillus identical with that obtained from the blood. It did, however, agglutinate by paratyphoid "B" serum to about  $\frac{1}{2}$  titre. Treatment was urotropin which caused the pus and bacilli to disappear from the urine in a few days. The fever ceased at the end of the second month; a week or so later he suffered from femoral thrombosis. Six months later he was quite well, his urine normal, and negative on culture.

The authors made an exhaustive study of this bacillus, and came to the following conclusions:

(1) "A new form of paratyphoid fever has been observed during the war by many investigators, chiefly in Eastern Europe and in Asia. The causal organism bacillus paratyphosus "C" is distinct from bacillus paratyphosus "A" and "B", though presenting relationship to the latter.

(2) "In this paper there is described a case of paratyphoid "C" occurring in England. The bacillus isolated is compared with other members of the Salmonella group in detail.

(3) "In its cultural and fermentative characters bacillus paratyphosus "C" is shown to differ from bacillus paratyphosus "B" in its failure to ferment inositol and in its slower rate of alkali production. It differs from bacillus suipestifer in fermenting arabinose and dulcitol.

(4) "A short review is given of the serological properties of bacillus suipestifer and of the related forms bacillus Voldagsen and bacillus Glässer. We find the suipestifers to fall into two serological groups, sharply separable by certain sera. By absorption tests it is shown that a Group I suipestifer will exhaust only Group II sera, leaving the specific titre of Group I sera untouched.

(5) "Bacillus paratyphosus "C" is shown to belong serologically

to the Group I suipestifers, in spite of the divergence in cultural characters.

(6) "Different strains of bacillus paratyphosus "C" vary in their relation to bacillus paratyphosus "B". In some the bacillus element is absent; in others very obvious. An example of each variety was isolated from the case described, and it is shown that the strain which at first showed no relation to bacillus paratyphosus "B" gradually underwent a serological change, acquiring the property of being partially agglutinated by a paratyphoid "B" serum."

ZWEIFEL, E.: **Investigation Concerning the Explanation of the Fetal and Placental Theory of Eclampsia** (Versuche zur Klärung der fötalen und placentaren Theorie der Eklampsie). *Zeitschrift für Immunitätsforschung und experimentelle Therapie*, Jena, 1921, xxxi, p. 22.

The author considers Lichtenstein's experiments definite in contraproof of the placental theory in the etiology of eclampsia, and a definite refutation of the anaphylaxis from placenta toxins. He does not think that eclampsia constitutes a condition of hypersensitiveness to fetal albumin and placental albumin. There evidently is no hypersensitiveness to fetal and placental albumin of the same animal species. The author in his own experiment on rabbits and guinea pigs has proved this many times. In his experiments on autogenous and fetal albumin, he has found that there is no hypersensitiveness to autogenous nor placental albumin. He considers the theory of eclampsia as an anaphylactic reaction to autogenous, fetal or placental albumin as definitely disproved.

McELROY, W. S., AND POLLOCK, H. O.: **Rate of Nitrogen Elimination.** *Journal of Biological Chemistry*, 1921, xlv, 475-481.

The products of absorption following the ingestion of one protein may differ considerably from others due to the wide variation in the chemical composition of the protein, as indicated by the qualitative and quantitative differences in the amino acids obtained upon hydrolysis. Therefore, variations in the rate of deaminization of



the various aminoacids may alter the curve of nitrogen excretion following the ingestion of different proteins.

Observations were made on dogs. The animals received no food for twenty-four hours previous to the experiment. In the morning they were fed a weighed amount of protein in the form of lean beef. This they ingested voluntarily together with a measured volume of water. The amounts of meat fed varied from 10<sup>g</sup> to 50 grams per kilo of body weight. The results show that a large part of the protein nitrogen consumed is rapidly transformed in the body and excreted in the urine, largely as urea. There is an hourly increase in the nitrogen excretion beginning shortly after the meal, increasing to a maximum and returning approximately to the fasting or original level within twenty-four hours. The rate of nitrogen elimination is an index of the rate of digestion and absorption.

SCHONFELD, H.: **The Toxicity of Placental Lipoids and their Role in the Etiology of Puerperal Eclampsia** (*Die Toxizität der Placentallipoide und ihre Rolle in der Aetiologie der Puerperaleklampsie*). *Deutsche medizinische Wochenschrift*, 1921, xlvii, p. 270.

In the experiments made on the placenta lipoids, the author used placenta in as fresh a state as possible. It was macerated and treated with sterile NaCl solution. Blood and tissues were discarded and it was sterilized with alcohol, and dried. After this mixture was pulverized and dried in the vacuum, it was treated with physiologic saline solution, and emulsion resulting. This emulsion was injected, either subcutaneously, or if rapid action was aimed at, intrapleurally. In small animals, the intravenous injections were not physical as thrombosis was the regular result.

*Results*.—A strong convulsive poison may be extracted from the lipid of the human placenta. This poison is thermolabile and becomes inactive when heated to 75° C. (167° F.). The inactive extracts cause changes in the parenchymatous organs and these changes resemble eclampsia. They would cause the death of the experimental animal anasarca and coma, but never convulsions. Conditions which greatly resemble puerperal eclampsia may be caused by adding a small quantity of glycerin. The active extracts of glycerin themselves will cause convulsions and severe cyanosis. This is not the

case in the common salt water suspension of the extract. If the non-glycerin extract is injected into the pleura, the animal will be atactic and dizzy, and run about for a short time and then will suddenly make large leaps and die suddenly. Cyanosis never is seen even where convulsions last for a long time. All lipid extracts, if they do not cause the death of the experimental animal, whether or not they contain the convulsing toxin, whether extracted in alcohol, ether, or petrol ether, will cause degeneration of the parenchymatous organs (liver, kidney) and the heart muscles. Usually thrombi were seen in the lungs or liver, and then the condition greatly resembles that of puerperal eclampsia.

The author found that placental lipoids would cause either, within physiological boundaries, hyperemia, increase of growth of the sexual organs, increase of labor pain, or a toxic degeneration of the parenchymatous organs, convulsions, degeneration of the endothelium, thrombi, and edema. This is a result as it is seen from any extracts of the endocrine glands. Probably the essential feature in the results is the dose and maybe antagonistic substances. On the latter, we are not sufficiently informed, but it is probable that thyreoidea, parathyreoidea, corpus luteum play a part in the intoxications of pregnancy. This is suggested by the hypertrophy and striking changes which these organs undergo.

The authors fractionize the various lipid constituents. The convulsing toxin is extracted by alcohol and acetone. It is probably not phosphorylated. The ether-alcohol extracts caused severe convulsions. The alcohol extract caused convulsions. A remnant of white powder which was suspended in salt water, caused no convulsion, but the animals were ill following the injection with bradypnoea and the hair stood on end.

LUMIERE, A., AND COUTURIER, H.: **Concerning Reports of Anaphylactic Shock Following the Introduction of Precipitates in the Circulation** (Sur les rapports du choc anaphylactique avec l'introduction de precipites dans la circulation). *Comptes Rendus de l'Academie des Sciences*, 1921, clxxv, 175, p. 461.

Arthus (De l'anaphylaxie à l'immunité. Masson, Paris, 1921) says that the production of certain precipitates in the circulating



blood does not necessarily cause shock similar to the anaphylactic. He cites the example of intravenous injection of an emulsion made of the white beeswax, which is quite innocent. This precipitation must take place in a medium containing blood-serum. These facts would suggest a contradiction to the theories generally maintained on anaphylactic shock. However, Arthus has made all his injections intravenously. The authors have made experiment with a number of insoluble substances introduced into the veins and the right heart. They would cause no shock unless they were introduced into the left heart. Ligature of the carotids will avoid these shocks completely. On the other hand, if the injections are made into the carotid, the affect is most disastrous.

The investigation of these authors have shown that the shock is produced whenever the precipitate or the flocculate suddenly arrives at the level of the vessels of the central nervous system. When the precipitate gets into the pulmonary circulation or into the peripheral capillaries the mechanical action on the endothelium of the vessels is delayed or arrested. This is the same process which takes place when a suspension of wax is introduced into the vein of the ear lobe or a rabbit by Arthus. The globular wax elements, which are relatively large and formed by a mixture of this suspension and the serum, are retained in the capillaries and are unable to respond by sudden action which would be indispensable to avoid anaphylactic shock.

The authors have made investigations on this experience of Arthus. They injected a 1 cm. cube of white wax emulsion into the right heart of a guinea pig. They experienced no shock. As soon as the emulsion was introduced into the left heart, typical shock occurred. In ten seconds the animal will drop on its side, have convulsions, and paralysis with all the symptoms of shock. According to the dose, the shock may be slight with rapid establishment of the normal, or fatal termination. When the carotids were ligated, intracardiac injections were without any effect. If 0.05 gram of hyposulphite of sodium is mixed with the 1 cm. cube of wax suspension, the mixture becomes unaffected. This is the case in spite of the fact that this salt has a pronounced tendency to reunite and precipitate the dispersed wax elements.

The administration of a nonfatal dose of the wax emulsion into the left heart will act as a vaccine for about 24 hours. It will counteract the barytic shock and the genuine anaphylactic shock, if the

guinea pigs are sensibilized. On the other hand, the administration of a parafatal injection of sulphate of baryta will render the animal insensible to the injection of intracardiac administration of the liquid of Arthus, for twenty-four hours. The wax emulsions act the same as other precipitates. The difference of effect, which are sometimes seen between one and the other insoluble substance, are the result of the form and extent of the insoluble elements and the route of administration. This would confirm the theory of shock being a purely physical condition.

LUMIERE, A.: **Superficial Tension and Anaphylactic Shock** (Tension superficielle et choc anaphylactique). *Comptes Rendus de l'Académie des Sciences*, 1921, clxxii, 1071.

W. Kopaczewski (Le rôle la tension superficielle dans les phénomènes de choc. *Comptes rendus*, t. 172, 1921, page 337) has shown that adding a solution of hyposulphite of sodium, 5 to 100, of the anaphylactic dose will tend to lower the superficial tension of the serum. The authors, however, have found that the tension is increased. They wish to emphasize, however, that this experience has value only in experimental use.

They found that in every case where they added an equal volume of solution of hyposulphite 5, 10, 15, or 20: 100 to the serum, the superficial tension was increased relative to the concentration of the solution. The anaphylactic shock is avoided the more readily the concentration of the solution.

POTTENGER, F. M.: **The Relative Value of Laboratory and Clinical Methods of Study in the Diagnosis of Tuberculosis.** *American Journal of the Medical Sciences*, September, 1921, clxii, No. 3, p. 352.

The laboratory has not been exaggerated in importance, but the time has come to devote greater study to the nonlaboratory investigations; or, to take it from another standpoint, we must remember that the patient, too, is a laboratory in which the actions are followed by reactions. We must observe and investigate the patient with the



same earnestness and zeal as the laboratory workers have studied his disease—its pathology, bacteriology and chemistry.

It is futile to depend upon the laboratory for progress in the diagnosis of early tuberculosis; intensive study should be made of the patient first, and this should then be supplemented by laboratory study. The diagnosis should be the result of a process of reasoning and based on the analysis and correlation of all the data obtained.

For satisfactory progress in treatment we recognize early tuberculosis. The most useful methods to this end are: (1) Clinical history; (2) physical examination; (3) examination of sputum; (4) roentgen rays; (5) tuberculin test; and (6) complement fixation.

*Sputum Examination.*—This is a purely laboratory method. Sputum is examined first for tubercle bacilli; second, for the presence of albumin; third, for lymphocytes. If tubercle bacilli are present, pulmonary tuberculosis is also present, but this does not mean that the disease is active, as old chronic quiescent cases will often show bacilli in the sputum. They are tubercle bacillus carriers as certain patients are typhoid carriers. On the other hand, the absence of bacilli does not mean the absence of tuberculosis. It simply means that the tubercles had not ruptured, freeing the bacilli. Ordinary methods of treatment and staining sputum will detect bacilli if present in numbers of 2000 to a cubic millimeter. The more refined method, that of homogenization, by treating the sputum with gasoline or xylol, and shaking, will permit one to find them if 200 to a cubic millimeter. One should not depend solely upon one test. In suspicious cases of early tuberculosis it should be collected for 24 hours or for 3 days and homogenized for examination.

In suspicious cases of early tuberculosis there should be an albumin test as the presence of albumin, except in the smallest quantities, is suspicious of tuberculosis. Exceptions should be made of those having a pulmonary abscess, bronchiectasis and infected bronchi.

The presence of lymphocytes in the sputum above 30 per cent is also confirmatory.

*Complement Fixation.*—This is theoretically positive in all cases of active tuberculosis, though certain patients will not react, as an isolated test is not safe to follow in diagnosis.

*Roentgen Rays.*—This is of great advantage in the detection of early clinical tuberculosis. One must be an expert, however, as an

operator and interpreter. Otherwise, the result is doubtful. It cannot be relied on wholly for diagnosis.

*Tuberculin Tests.*—The author believes this test is very useful. His experience has been that a prompt marked reaction coincides closely with his opinion of clinical activity, and a slight or delayed reaction coincides with his opinion of partial quiescence.\* He uses intradermal tests, using 0.1 to 0.2 c. c. of a 1 to 5,000 dilution of Koch's O. T. injected between the layers of the skin, or cutaneous tests, using full-strength Koch's O. T. This is always used in conjunction with purely clinical methods in making a diagnosis.

*Clinical History.*—The author classifies most the symptoms of pulmonary tuberculosis in two groups,—the toxic and reflex. He has added the third group of these symptoms which are incident to the disease itself, and then another group, in advanced tuberculosis, in which are placed the symptoms and syndromes which result from the disease.

GROUP I (Symptoms Due to Toxemia).—Malaise, lack of endurance, loss of strength, nerve instability, digestive disturbances (hypomotility and hyposecretion), metabolic disturbances, resulting in loss of weight, increased pulse rate, night sweats, temperature, blood changes.

GROUP II (Symptoms Due to Reflex Cause).—Hoarseness, tickling in larynx, cough, digestive disturbances, hypermotility and hypersecretion, which may result in a loss of weight, circulatory disturbances, chest and shoulder changes, flushing of face, and apparent anemia.

GROUP III (Symptoms Due to the Tuberculosis Process per se).—Frequent and protracted colds, spitting of blood, pleurisy, and sputum.

GROUP IV (Symptoms Which Result from Pulmonary Tuberculosis).—Perspiratory changes dyspnea, circulatory changes, changes on part of nervous system, general metabolic changes, changes in blood, degenerative changes, menstrual irregularities, and other changes in internal secretion.

The presence of absence of certain symptoms and the presence of certain ones in combination aid, not only in suspecting tuberculosis, but judging whether or not it is active.

In GROUP I the symptoms noted may be found, though differing



in severity, in all toxemias. They may be present in cases of nerve or endocrine unbalance, or may be due to overwork.

In GROUP II the symptoms are usually spoken of as functional and point away from the lung. Digestive disturbances, the symptoms of the toxic group, are very suggestive, especially if laryngeal irritation is present. Spitting of blood should always be considered as due to tuberculosis unless some other cause is obvious. Pleurisy, too, is usually of tuberculous nature. If combined with laryngeal irritation, and symptoms of GROUP I, it always means active tuberculosis. Sputum, if due to tuberculosis, is usually accompanied by laryngeal irritation and other reflex symptoms, and some of those belong to GROUP I.

The most important group, from a diagnostic point of view, is GROUP III; few of these symptoms occur alone. By making a careful history, and following this group of symptoms, little doubt should be left as to the presence or absence of tuberculosis.

*Physical Examination.*—The author especially emphasizes certain changes which give primary evidence, corroborated by the findings on auscultation and percussion. In auscultation, the changes found are not all due to the modifying of the sounds in the lung. The muscles, subcutaneous tissue, ribs and other structures, modify the sounds. Contracting muscles may give a fair imitation of the respiratory murmurs in complete pneumothorax or in empyema. In percussion, over the apices over the second rib, upward, in early tuberculosis, the tension of the soft tissue is revealed, especially in the degeneration of the subcutaneous tissue and increased muscle tone. These often make up most of the departure from normal in the percussion note. This increased tension produces a fixing of the upper chest wall, and produces greater changes in the percussion note and the percussion resistance than can be produced by the few tubercles in the lungs.

Palpation is as accurate as percussion at its best; different density in the lungs, mediastinum and pleura may be felt by light touch palpation. Also infiltration, empyema, cavity, pleural exudate, thickened pleura, the borders of the lungs, the heart and liver, may all be detected by palpation.

Inspection will show certain disturbances in physiologic action in pulmonary tuberculosis; motor and trophic changes in the muscles, skin and subcutaneous tissue, as follows: First, the motor re-

flex is shown in the sternocleidomastoid, scaleni, pectoralis, trapezius, levator anguli scapulae, rhomboidei and diaphragm; and second, the pulmonary trophic reflex, is shown in the skin and subcutaneous tissue from the chin to the second rib, anteriorly, and from the base of the skull to the spine of the scapula, posteriorly; and the muscles belonging to the shoulder girdle and the diaphragm as mentioned above. These reflexes are produced by impulses coming from the inflamed lungs. They are the most dependable symptoms indicative of active inflammation in the lungs. They are of value in early tuberculosis because clinical tuberculosis usually manifests itself long after the lung tissue has been invaded.

CARREL, A., AND EBELING, A. H.: **Age and Multiplication of Fibroblasts.** *The Journal of Experimental Medicine*, December, 1921, xxxiv, No. 6, p. 599.

The experiments of Loeb and Northrop on the temperature coefficient of duration of life of *Drosophila* lead to the conclusion that the duration of life was probably determined by the production of a substance leading to old age, or by the destruction of a substance which normally prevents old age and natural death. The purpose of the experiments described was to ascertain whether a definite relation exists between the rate of multiplication of fibroblasts cultivated in plasma and the age of the animal from which the plasma is obtained, and whether the modifications brought about by age in the action of the plasma on the fibroblasts are due to the disappearance of an accelerating factor, or to the production of an inhibiting factor.

Experiments were made with embryonic heart and liver fragments which were cultivated in plasma obtained from 4 month, 2 year, and 5 year old chickens. The ring of connective tissue produced around the fragments was larger in the plasma of the young than in that of the older chickens. A larger amount of connective tissue was produced in the serum of a one month old chicken than in a 9 year old cat and the same phenomenon occurred when the sera of a 20 year and 45 year old human beings were used as media.

Another series of experiments was made using more precise measurements. Pure cultures of fibroblasts, previously kept in a mixture of embryo juice, were used and a study was made of the rate



of growth and the duration of life of the fibroblasts in the plasma of 6 week, 3 month, 3 year and 9 year old chickens. A further comparative study was made of the growth of fibroblasts in media containing no serum, and serum under low and high concentrations, to determine whether the decreasing rate of cell multiplication was due to the loss of an accelerating factor, or to the increase of the inhibiting one.

The authors conclude that under the conditions of the experiments and within the limits of accuracy of the method, there is a definite relation between the rate of growth of a pure culture of fibroblasts, cultivated in plasma, and the age of the animal from which the plasma is obtained, the rate of cell multiplication varying in inverse ratio to the age. A similar relation exists between the duration of life in vitro of the fibroblasts, and the age of the animal. The variation in the growth of a culture of fibroblasts may be used as a reagent of certain modification occurring in blood serum under the influence of age. The action of age on serum is characterized not by the decrease of an accelerating factor for the multiplication of fibroblasts, but by the increase of an inhibiting factor.

H. M. FEINBLATT.

McMASTER, P. D., AND HAESSLER, H.: **The Factor Determining the Spread of Red Marrow During Anemia.** *The Journal of Experimental Medicine*, December, 1921, xxxiv, No. 6, p. 579.

Four series of 12 rabbits each were used for these experiments. These were rendered anemic by almost daily bleeding from the heart for a period of 6 to 8 weeks. Daily examinations were made to determine the hemoglobin, the fragility of the cells and the number of reticulated cells. One rabbit of each pair was given subcutaneous injections of hemoglobin solution. The hemomoglobin content was kept at a level of 50 per unit in all the rabbits. The animals receiving the hemoglobin injections daily were found to regenerate more quickly than the controls and it was necessary to remove more blood to keep the hemoglobin per cent down to 50. Though the rabbits injected suffered a greater depletion of stroma substance the resistance of the cells gave no indication of any lack of stroma.

At autopsy the erythropoietic tissue of the animals injected with

hemoglobin had undergone extensive hyperplasia, whereas that of the controls had increased little if at all. The histologic pictures showed as great a contrast on the whole as the gross. Large aggregations of the pycnotic nuclei of immature cells, the mark of erythrogenic islands of great size, at once attracted attention.

The widespread "currant jelly" marrow of pernicious anemia was observed in the animals rendered anemic but supplied with hemoglobin in excess; while the pale restricted marrow of cases suffering from chronic anemia due to repeated hemorrhage is associated with depletion of the constituents necessary for pigment production.

H. M. FEINBLATT.

GUNDERSON, A. H.: **The Basal Metabolism in Myelogenous Leukemia and Its Relation to the Blood Findings.** *The Boston Medical and Surgical Journal*, December 29, 1921, clxxxv, No. 26, p. 785.

The cases reported were studied with the object of determining whether the relationship between metabolism and leucocytosis is constant and whether any other pathological features of the blood are associated with the changes in metabolism. Nineteen cases are reported with determinations made once in 6 cases, twice in 3 cases, five times in 1 case, and eighteen times in 1 case. At the same time that the basal metabolism was determined an examination of the blood was made which included the erythrocyte count, hemoglobin estimation, total and differential leucocyte count, and study of the red cells and platelets. In all 62 metabolic determinations were made and every one, regardless of the stage of the disease or effect of the treatment, was above normal. Only 13 determinations were 10 per cent or less above normal, 11 of these being in one case, and only 31 were 20 per cent or less above normal. There is a general tendency for the highest figures for basal metabolism to be associated with the highest leucocytosis and this is especially characteristic of cases which have received no radium or not been treated for a long time. Also a study of the whole series indicates clearly that the increase in basal metabolism bears at least as close a relation to the number of immature white cells in the blood as it does to the total leucocyte count. Besides the relationship between increases of immature leucocytes and elevation of the basal metabolism it was noted



that other very immature bone-marrow elements occurred with distinct increases of basal metabolism. When blasts were numerous or megacaryocytes were found, the basal metabolism was higher than when such cells were not present. The basal metabolism determinations may be considered as indices of great activity of the leukopoietic tissue.

M. M. BANOWITCH.

DAVIS, E. G.: Urinary Antisepsis—The Secretion of Antiseptic Urine by Man Following the Oral Administration of Proflavine and Acriflavine—Preliminary Report. *Journal of Urology*, March, 1921, v, No. 3, p. 215.

It has been shown that intravenous use of proflavine (diamino acridinum sulphate) and acriflavine (diamino methyl acridinum chlorid) in rabbits will cause secretion of antiseptic urine (Davis and White: Urinary Antisepsis—The Secretion of Antiseptic Urine Following the Administration of Acriflavine and Proflavine: Preliminary Report. *Jour. Urol.*, 1918, ii, 299.).

The following results are from experiments:

*Toxicity.*—Proflavine and acriflavine may have toxic effect in large doses; the amount necessary to produce a distinct antiseptic effect in urine is exceedingly minute in comparison; rabbits were given 0.2 gram at a dose with no ill effects, while 0.05 gram given to man, weighing 70 kilos, exerted distinct antiseptic action in urine for period of several hours. Prolonged administration of daily dose of 0.02 or 0.03 gram, through a stomach-tube for a period of thirty days, seemed to have apparently little effect on two of a series of three with each drug, but the third one died of inanition apparently.

In patients the symptoms from 0.3 gram in 30 per cent of cases showed nausea; and not a few had mild catharsis. However, the giving of but 0.01 gram is followed by antiseptic urine; yet the results as yet do not justify indiscriminate use of large or long-continued dosage. It is to be noted also that the drug was given only to normal individuals, indicating that results are purely experimental; clinical experience too meagre to be convincing.

Davis and Harrell (Acriflavine in the Treatment of Gonorrhea—An Experimental and Clinical Study. *Jour. Urology*, 1918, ii, 257)

found that acriflavine in solution of 1 to 300,000 inhibits the gonococcus.

The drug is probably completely eliminated by the kidney. Theoretically acriflavine should be of value as a prophylactic in treatment of early anterior urethritis, in preventing development of posterior urethritis, and in treatment of early posterior urethritis. In a limited number of cases favorable results have been obtained in both anterior and posterior urethritis of recent date; it was shortly supplemented by urethral installations with local treatment.

*Results.*—Colon bacilli survive about eight hours in alkaline urine containing acriflavine; experimentally it was more prompt and efficient given in smaller dosage intravenously.

Indiscriminate use of the drug of an undetermined purity and toxicity and efficiency is distinctly inadvisable.

OLITSKY, P. K.: **Experimental Studies on the Etiology of Typhus Fever. I. Concurrent Infections during the Course of Experimental Typhus Fever in Guinea Pigs.** *The Journal of Experimental Medicine*, December, 1921, xxxiv, No. 6, p. 525.

During the past 5 years new light has been shed on the significance of specific antibodies and the nature of the typhus virus. Weil and Felix recovered a bacillus proteus X19 from the urine of typhus patients which were agglutinated by the serum of these cases and to a higher degree than the Plotz bacillus. These agglutinins appear late in the disease and increase in concentration at the crisis and persist for months. Agglutinins were subsequently found for other organisms.

Four requisites are outlined to determine experimental typhus fever: (a) Induction of the typical disease through inoculation from animal to animal, indefinitely; (b) presence of the characteristic vascular lesions, especially in the brain; (c) absence of secondary infections with ordinary bacteria; and (d) development in recovered animals of immunity to subsequent injections of typhus virus. In a given case all these requirements must be fulfilled, since it has been demonstrated that nonspecific fevers simulating typhus may occur in guinea pigs. The four requirements have not been fulfilled with the Plotz bacillus.



Experiments were made with human and louse strains of typhus virus obtained from Dr. S. B. Wolbach and of another human strain from a recently arrived immigrant, a Czecho-Slovak.

Three strains of virus were propagated in guinea pigs. Immediately before the next series of normal pigs were inoculated cultures were made upon various media of the blood and splenic tissue of the injected guinea pigs.

Cultures were made during the incubation period and during the fever. No ordinary bacteria appeared in the cultures made during the incubation period, while on the first day of the febrile reaction different bacteria were found in 6 of 26 guinea pigs cultured; on the 2nd day in 10 of 16; on the 3rd day in 3 of 4; and on the 4th in all of 4 pigs observed. These findings indicate that the virus of typhus fever is distinct from ordinary cultivable bacteria, and, as the disease progresses, the infected guinea pigs become subject to invasion by secondary bacteria thus producing a mixed infection. Of the organisms found the following were the most common: *Bacillus Plotz*, *Bacillus Welchii*, Gartner type of bacillus, *staphylococcus aureus* and *bacillus proteus*.

The author believes the cultured organisms are independent and unrelated to the true virus of typhus fever.

H. M. FEINBLATT.

WOLLSTEIN, M.: **Experimental Mumps Meningitis.** *The Journal of Experimental Medicine*, December, 1921, xxxiv, No. 6, p. 537.

A virus was obtained from the mouth secretions of 4 children on the 2nd and 3rd days of an attack of typical parotitis. A filtrate of the pooled mouth washings was inoculated into the parotid glands of two cats and into the subarachnoid space of two other cats. The two given the parotid gland inoculation developed typical parotitis with swelling, leucocytosis and fever. When killed on the 16th day, the parotid, submaxillary, and adjacent lymph glands were swollen, congested and moist. On section epithelial swelling, edema, and interstitial infiltration characteristic of human and experimental parotitis were observed.

The two cats injected into the subarachnoid space developed signs of meningeal irritation, such as, increased intraspinal pressure, a

marked increase in globulin cells and the latter reaching as high as 22,000 with 84 per cent polymorphonuclear cells and 16 per cent mononuclears. Symptoms of irritation, such as, ocular irregularity, prostration, and fever were present. Spinal fluid from these cats injected into the subarachnoid space of normal cats reproduced the same picture. Control animals inoculated with sterile saline, sterile ascitic fluid and with sterile mouth washings of normal individuals all gave *no* evidence of meningeal irritation.

H. M. FEINBLATT.

WALLACE, G. B., AND PELLINI, E. J.: **Capillary Poisons and Acidosis.**  
*Archives of Internal Medicine*, December, 1921, xxviii, No. 6, p. 711.

The alkali reserve of the serum was estimated in dogs before the administration of various capillary poisons and at intervals after this procedure. A marked reduction in the alkali reserve was found to occur after the injection of uranium, cantharidin, and diphtheria toxin. Since the first two of these substances are particularly prone to attack the kidney, an experiment was devised to determine whether the kidney damage was responsible for the acidosis developing. A nephrectomized dog was observed over the same period as a dog treated with uranium. The alkali reserve increased in the nephrectomized dog, while it markedly decreased in the uranium dog. The kidney having been ruled out, dogs were poisoned with substances attacking the intestine and liver (emotin and arsenic respectively) but not the general capillary fields. In spite of fatal issues no acidosis was demonstrated in these dogs. Evidence pointing to the muscle as the probable seat of origin of at least part of the acidosis was obtained in the following experiment. The femoral artery and vein of a normal dog were anastomosed with the vessels of a dog poisoned with diphtheria toxin, so that the leg of the poisoned dog received its blood supply from a normal dog. There was a moderate drop in the alkali reserve of the blood drawn from the jugular vein of the normal dog and a very marked drop in the blood from the femoral vein draining the poisoned leg.

It seemed to the authors that the cause of the acidosis following the administration of capillary poisons was to be found in the im-



paired capillary permeability, with consequent suboxidation of the tissues. Suboxidation in dogs therefore was induced by two methods which had no bearing on capillary permeability. Methemoglobinemia was induced by the use of sodium nitrite, and with the methemoglobinemia and its attendant cell asphyxiation acidosis appeared. Potassium cyanid, which somehow prevents the tissues from using the available oxygen, also resulted in acidosis. To rule out the tendency to narcosis and lessening of the respiratory function, which was seen with most of these poisons, the authors narcotized a dog with morphin and found that an actual increase in the alkali reserve was observed.

These experiments suggest that the acidosis seen in many infections may be due to the deleterious effect of the toxins of the disease on the general capillary field, causing suboxidation. There is possibly some connection between the acidosis of nephritis and heart disease and the general capillary injury which is so often present in these diseases.

T. HOWARD.

NIELSEN, C., AND HIGGINS, J. A.: **Further Observation on the Pharmacology of Benzyl Compounds.** *The Journal of Laboratory and Clinical Medicine*, November, 1921, vii, No. 2, p. 69.

The authors concluded that all the benzyl esters they investigated produced relaxation of the intestinal muscles, lowered the blood pressure and depressed the respiration in a manner corresponding, in a general way, to the action of benzyl benzoate as demonstrated by Macht.

The power to relax smooth muscles and thereby relieve spasmodic pain seems, in the cases of simple benzyl esters, to be proportionate to their rate of hydrolysis; but in the case of benzyl esters containing substituting groups such as benzyl salicylate and benzyl acetylsalicylate, rate of hydrolysis to give benzyl alcohol is not a criterion of pharmacologic action.

Of the twelve benzyl compounds that they tested, benzyl acetylsalicylate appears to be the most powerful intestinal relaxant. Benzyl salicylate is also very efficient. Further investigation of these esters is now being carried out.

C. M. ANDERSON.

PASKIND, H. A.: **Some Differences in Response to Atropin in White and Colored Races.** *The Journal of Laboratory and Clinical Medicine*, November, 1921, vii, No. 2, p. 104.

In the colored patients the average normal heart rate was 78, while atropin produced an average decrease of one beat per minute.

In the white group the normal heart rate was 87; and in these cases atropin reduced the rate to 77, or an average slowing of 10 beats per minute.

From the results of the studies made, it was concluded that the negro is less susceptible than the white man to the central action of atropin.

C. M. ANDERSON.

BIRCHER, M. E.: **Clinical Diagnosis by the Aid of Viscosimetry of the Blood and the Serum with Special Reference to the Viscosimeter of W. R. Hess.** *The Journal of Laboratory and Clinical Medicine*, December, 1921, vii, No. 3, p. 134.

The problem of viscosity of the blood was taken up by Poiseuille in 1847 and, though a considerable amount of work has been done since then, the medical profession, especially in America, has paid little attention to it.

The value of determining the viscosity is three-fold:

(1) In circulatory questions the viscosity should be considered. Red cells and viscosity are the two opposite factors which have a determining influence on the effect of heart work.

(2) The viscosimetric factor is an excellent check of the normal blood test, because it depends on the different constituents of the blood. It is a delicate indicator for changes in their relation, and on this fact are based some valuable diagnostic information.

(3) The viscosity is an accurate means of analyzing the constituents of the blood: the quantity and quality of protein dissolved in plasma may be studied as well as the exact volume of the cellular elements. On these determinations are based the diagnostic applications supported by Naegeli.

The viscosimeter of Hess has overcome all the difficulties necessarily adherent to the determination of a dynamic factor in a living



body. The test requires one drop of blood, and is easily carried out in thirty seconds, giving an accuracy of clinical value.

The viscosity of blood is compared with the viscosity of distilled water under the same conditions and is therefore relative. The normal values depend on age, sex, and constitution: the average is 4.5.

C. M. ANDERSON.

FEINBERG, S. M.: **The Value of the Ross-Jones Test on Bloody Spinal Fluid.** *The Journal of Laboratory and Clinical Medicine*, August, 1921, vi, No. 11, p. 642.

The question of the value of the globulin test in bloody spinal fluids often is raised. The author attempts to show that the blood must be in certain concentration before the test is of no value. He carried on a certain set of experiments with bloody spinal fluids, in which the blood was in different concentrations, and the following conclusion was reached:

A definite amount of blood must be present in the spinal fluid before a positive globulin test is obtained; that this amount is the concentration necessary to give in the neighborhood of a little over 300 cells per c. mm.; that when one obtains traumatic blood in the spinal fluid with a positive Ross-Jones test, if by determining the amount of blood present it is found to be below the necessary limit as here determined, the fluid is undoubtedly pathologic.

C. M. ANDERSON.

CANNON, P. R.: **The Effects of Diet on the Intestinal Flora.** *The Journal of Infectious Diseases*, October, 1921, xxix, No. 4, p. 369.

The work here reported is based on the idea that diet is the fundamental factor controlling the activities of the intestinal tract. The effort has been to get a quantitative idea of the relative abundance of the different organisms. After outlining the methods pursued the author concludes: Grain foods, lactose and dextrin, when fed to albino rats in proper proportion lead to a marked predominance of aciduric bacteria in the intestinal tract, whereas animal proteins encourage the gas-producing proteolytic types, both aërobic and an-

aërobic. Vegetable proteins and certain starchy foods do not encourage the development of proteolytic types to the same extent as animal proteins, and, in fact, in many cases exert a distinct antiputrefactive effect, favoring the development of *Bacillus acidophilus* and suppressing the development of hydrogen-sulphid-producing organisms and spore-forming anaërobes. In two experiments with human adults extending over a period of ten days a diet composed of bread, milk and lactose markedly encouraged the development of aciduric organisms, and in one experiment of the same time period a diet high in vegetable protein led to a predominant aciduric flora with the elimination of anaërobic spores.

M. M. BANOWITCH.

MINOT, G. R., AND SMITH, L. W.: **The Blood in Tetrachlorethane Poisoning.** *Archives of Internal Medicine*, December, 1921, xxviii, No. 6, p. 687.

Tetrachlorethane is a waterproof non-inflamable solvent which has come into use recently in the finishing of aeroplane wings and in the preparation of noninflamable films, lacquered goods, artificial silks, etc. It is capable of causing a fatal toxic hepatitis and a number of such deaths have occurred in Germany and England. No fatal cases have been reported in this country though some degree of poisoning has not infrequently been encountered in the trades mentioned. Minot and Smith's report has to do chiefly with the blood changes noted in a study of sixty-eight employees of an artificial silk factory. The clinical course is described as characterized by early general, gastric, and nervous symptoms. There are first noted fatigue, a tendency to perspire, drowsiness, loss of appetite, nausea, vomiting, constipation and headache. Later, jaundice develops, and the gastric and nervous symptoms increase. There may be confusion, delirium, coma, and death. Blood abnormalities were usually found to precede the onset of symptoms. The most characteristic change was an increase in the number of large mononuclear cells, often reaching 40 per cent. This change was found in many individuals who never developed symptoms. A progressive increase in the number of these cells, after the original reaction to exposure to the poison, did, however, seem to indicate impending trouble. With such an



increase there was usually noted a change in the type of cell. The large mononuclears included more of the younger type, without indentation of the nuclei, and the number of broken cells observed became unusually high, sometimes outnumbering the formed white cells. These fragile cells were identified as mononuclears and were regarded by the authors as younger forms of this cell. The number and youth of the mononuclear cells seemed to bear a definite relation to the severity of the poisoning. A slight elvation in the white count, a slight but progressive anemia, and a slight increase in the number of platelets were also found. The authors advocate a systematic examination of the blood of all individuals who are exposed to tetrachlorethane in addition to a clinical observation of such individuals, in the regulation of their employment.

T. HOWARD.

## SECTION ON PEDIATRICS

FINDLAY, L.: **The Treatment of Prolapse of the Rectum in Infancy and Childhood by the Injection of Alcohol.** *The British Journal of Children's Diseases*, April-June, 1921, xviii, p. 83.

Prolapse of the rectum has always been admittedly a troublesome condition to treat. It is one of which the physician and surgeon both fight shy.

In view of the simple procedure to be described and the most excellent results which it has produced, the writer considers that the cauterization of the bowel, taking in a reef in the sphincter, etc., is quite unwarranted, at least in the case of the child.

The method practised in Geneva was the injection of alcohol into the submucous tissues on either side of the rectum. As the operation must be performed under an anaesthetic the patient is prepared in the usual way by administering a purgative, and, if necessary, complete clearing out of the bowel by means of an enema. The perineum is cleaned with methylated ether and disinfected with iodine. With the finger in the rectum, so that one is able to gauge the position of the point of the needle, 15 c. c. of absolute alcohol are injected on either side at a depth of about 3 in. The needle an ordinary exploring needle, with syringe containing the necessary amount of alcohol attached, is introduced about  $\frac{1}{4}$  in. from the anal margin, and passed along the side of the bowel a distance of  $2\frac{1}{2}$  to 3 in. where the alcohol is injected. This is done on either side. The punctures are sealed with collodion, a fairly large pad applied, and the buttocks firmly strapped together. Instructions are given that the child must not be allowed to sit up to defecate, and the motions are passed along the side of the pad while lying in bed. Fresh dressings are applied daily for seven to ten days, by which time it is usually found safe to discard them.



During nine months the writer treated some twenty-two children between the ages of five months and seven years suffering from different degrees of prolapse of varying duration; in some cases the prolapse had been of several years duration. In the majority of the cases the prolapse was intermittent and only occurred when the bowels moved, but in all required manual reduction. In several of the children, however, the prolapse was constant, and in one case had been down persistently for a period of nineteen months. In this latter case the motions were always diarrheal in character, and strapping of the buttocks, with the child lying on its face, had been practised for long periods without any benefit.

In practically every case a complete cure was obtained. In several the prolapse returned, requiring a second injection, and in one child a third injection was necessary before a cure was obtained. In one case the prolapse was due apparently to the presence of a small polypus, which was removed at the same time as the second injection of alcohol was given.

It is usually recommended that if diarrhea be present that this should receive attention in the first place. This writer believes it futile to attempt to cure the diarrhea before the prolapse. It would seem that it is the prolapse which keeps up the diarrhea and not vice versa. In the child in whom the prolapse had been down for nineteen months the motions were constantly loose, and immediately after the cure of the prolapse the diarrhea ceased, the motions becoming quite normal, and the child increasing in weight. The occurrence of diarrhea is understandable since ulceration with considerable consequent irritation not infrequently results from injury to the prolapsed bowel.

There are two factors responsible for the cure by this method of treatment. It would seem likely that at the seat of the injection there results a certain amount of irritation, with the formation of fibrous tissue and a probable fixing of the bowel-wall to the tissues of the pelvic cavity. Examinations per rectum at varying periods after injection to detect any evidence of thickening showed no induration or stenosis of the bowel resulting. The other factor playing a part in the cure is a return of tone to the sphincter. In all cases of prolapse the tone of the sphincter is much impaired, amounting to a paresis in the intermittent cases and to a complete paralysis in those cases where the bowel is constantly prolapsed, due to the stretching influence of

the protruding mass of rectal tissue. By reduction of the prolapse the strain is removed from the muscle, which gradually contracts and regains its tone and power—a point which helps in consolidating the cure. The sphincter regains its tone in about ten days.

VON BOKAY, Z.: **The Treatment of Pylorospasm in Infants with Papaverinum Hydrochloricum** (Die Behandlung des Pylorusspasmus des Sauglingsalters mit Papaverinum Hydrochloricum). *Jahrbuch für Kinderheilkunde*, 1921, xciv, 233-250.

The majority of cases of pylorostenosis in infants exist not as a result of a hypertrophy in the anatomical sense, but the hypertrophy is formed functionally as a consequence of the spastic contracture of the musculature. In the internal treatment of spasm and stenosis of the pylorus the best results can be obtained from the use of papaverinum hydrochloricum. The dose apportioned should not be too small. Up until now, experiments have shown that infants are not too sensitive to this drug. The suitable dose is according to these experiments 0.01 to 0.02 grams per day, injected subcutaneously and this dose can be administered peacefully and throughout a long time. Looking over the cases reported and the conclusions which could be drawn from them, the opinion of Prof. Bokay which he uttered in 1917 changed, whereupon "the assertion of the indication of carrying through of an operation will bear no delay—the operation is carried out, if they do not succeed in a short time in preventing the fall of the weight curve by internal and dietetic treatment" a change only inasmuch as for the statement of the indication of operation in each case the subcutaneous administration of papaverinum hydrochloricum is tried, and if it is seen that there is no result with small doses, then larger doses are given, and in a large number of cases, operative interference was avoided.

REISS, O.: **Institution and Maintenance of Breast Feedings.** *Archives of Pediatrics*, 1921, xxxviii, p. 296.

The author believes, if properly advised, 95 per cent of mothers could and would nurse their children and that the obstetrician during



the pre-natal period must care for the mother that she is physically and psychologically ready to carry out this function.

"The fundamental requirements for the stimulation and continuation of the milk flow is the complete and regularly repeated emptying of the breasts: (1) Three hour intervals; (2) fifteen to twenty minutes at the breast, alternating breasts at each feeding. The careful observance of this dictum forms the greatest possible basis for the maintenance of breast feeding".

During an acute illness the breasts should be stimulated regularly by extracting the milk by artificial means so that breast feeding may be easy of reinstitution.

The condition of the mother, her habits of hygiene and diet should be carefully looked into and corrected and very often her milk can be increased to an adequate quantity. Two things are essential, a willing and patient mother and a regular, persistent, consistent and insistent demand on the breast.

**HASLAM, E.:** *The Establishing and Re-establishing of Breast Feeding.*  
*The Public Health Journal*, 1921, xii, p. 222.

The following rules are given the mother, and in a few days the increase of breast milk fully repays the efforts made:

(1) A hopeful and determined point of view on the part of the mother.

(2) Absolute regularity of feeding with no night feedings.

(3) Take a drink of water, milk, cocoa or weak tea before each feeding.

(4) Personal hygiene—a daily sponge or full warm bath and a satisfactory daily bowel movement.

(5) To sit before two bowls of water—one hot and one cold, each with its own wash cloth and bathe the breast with each alternately until a pink surface results—dry the nipples thoroughly to prevent cracking.

(6) Massage breasts toward the nipple to stimulate the blood-flow.

Prenatal care insists upon the importance of at least 6 glasses of water each day. The baby should be put to the breast within six hours of birth for less than two minutes to stimulate the secretion of

milk and use both breasts at each nursing, the first day for two minutes, the second day three minutes and so on. Absolute regularity of feeding times gives the gland the education necessary. Empty the breast completely then it fills again, as it were, to the same level and beyond, if not emptied the milk falls off in quantity and quality.

MOORE, C. U.: **Ten Years' Progress in Children's Diets. Vitamins.**

*Northwest Medicine*, September, 1921, xx, No. 9, p. 247.

*Food Groups.*—(1) Vegetables: Spinach, carrots, cauliflower, beets, string beans, and potatoes:

(2) Protein: Milk, eggs, meat, fish, cheese, liver, and kidney.

(3) Cereals: Whole wheat, oat meal, rice, bread and corn meal.

(4) Fats: Butter, and yellow suet.

(5) Sweets: Glucose, syrups, karo, honey, jelly, and jam.

(6) Fruits: Oranges, tomatoes, prunes, apricots, rhubarb, and apples.

*Summary.*—(1) The discovery of vitamins and the effect of their absence in war diets has shown that chemical analysis alone cannot reveal the total value of a food. Its biologic value must also be known.

(2) The scientific diet of to-day must contain not only the known chemical elements, fat, protein, carbohydrates, salts and water, but also the unknown elements fat-soluble A, water-soluble B, and water-soluble C.

(3) Fat-soluble A is found in cod-liver oil, butter, glandular organs and in green leaves, and its absence from the diet causes xerophthalmia and perhaps rickets.

(4) Water-soluble B is widely distributed in plant food, especially in the germ of cereal grains. Its absence causes polyneuritis.

(5) Water-soluble C prevents scurvy and is present in fresh vegetables and some fruits.

(6) Prolonged heating or even ageing, especially in the presence of an alkali, destroys the vitamins.

(7) Insufficiency of vitamins in the diet may cause some of the indefinite symptoms complained of in both children and adults and may also influence infectious processes.



(8) A case of subacute scurvy is presented, illustrating the value of fresh cabbage juice as an antiscorbutic.

(9) Our knowledge of vitamins makes it incumbent upon us to see that every baby is breast fed and that after infancy it have a properly balanced ration. A table of foods is suggested as a guide in the home.

GERSTENBERGER, H. J.: **Malt Soup Extract as an Antiscorbutic.** *American Journal of Diseases of Children*, April, 1921, xxi, No. 4, p. 313.

The author treats scorbutic infants with Keller's malt soup, a mixture containing 100 grams of so-called malt soup extract. To one of the patients' diet, orange juice was added. One child was admitted to the hospital at ten months of age who had been fed a mixture of one-half milk and one-half oatmeal water, with cane sugar. Then he received, for one month, two-thirds milk and one-third oatmeal water. During this month he suffered from diarrhea. Someone in charge of him gave him castor oil, but without beneficial effects on the painful lower extremity. The child had scurvy with swollen and bleeding gums about the upper and lower incisors, enlarged epiphysis, a rosary, an enlarged spleen, increased permeability and capillaries, swollen right and a sensitive left knee. The child was then fed Keller's soup and orange juice, and within ten days the gums had become normal, the joint swelling decreased.

This article reports the rapid and marked cure of three cases of severe infantile scurvy by the administration of 100 grams of malt soup extract, and orange juice. The explanation of the antiscorbutic property of the malt soup extract is that it was, in all probability, made from barley of the proper age and state of germination or from a lot of barley possessing an unusually high amount of potential antiscorbutic material.

GERSTLEY, J. R.: **Risking Tonsillectomy in a Thymus Case.** *Medical Clinics of North America*, July, 1921, v, 245.

The patient is a boy three years old. The only striking abnormality upon inspection other than his open mouth, is the peculiar

circle under each eye. A marked bilateral cervical adenopathy and similar marble-sized enlargements in the axillæ and groin are revealed by the palpating finger. Percussion of the chest reveals dullness extending two fingers to the right of the sternum and up around into the second left interspace. Except for a very slight systolic murmur the heart tones are clear. Blood examination demonstrates a slight deficiency in red cells and hemoglobin, and a white count of 15,000, 65 per cent of which are small mononuclears. The throat is almost entirely closed by enormously enlarged tonsils. Not only during sleep, but even at play and at meals his respiration is seriously impeded. Roentgenograms showed a definite enlargement in the mediastinum. There was a question whether this was a congenital heart or a thymus, but subsequent history favored thymus. The condition improved consistently. The child at the age of three years is brought for advise as to tonsillectomy. Interference with respiration is so marked as to be a continuous source of difficulty. The parents are hesitant about an operation knowing the danger in thymus cases. A great mass of data warns that these children are subject to sudden death during operation. In many cases of unexpected death autopsy has revealed nothing but a hypertrophied thymus gland. How such an anomaly acts however, is by no means certain. Some believe it due to an excessive secretion from hyper-development and abundance of Hassall's corpuscles; others believe clotting blood in the heart and vessels prevents filling of the aorta, to others there is a toxic myocarditis. Some have found chromaffin aplasia, some have not. A thymic anaphylaxis has been blamed, and others believe death due to a rupture of a hypoplastic cerebral blood vessel. The results of experimental work are so contradictory that we know very little of the thymus other than the tradition of sudden death. A review of the literature from a somewhat critical standpoint makes one doubt that all cases of so-called thymic death are actually due to an enlarged thymus. For instance, it is not unusual for a physician called on such a case to sign the certificate as thymic death, but not to verify this at autopsy. One prominent pediatrician has advised that the risk should not be taken. Another believes operation is justified. The author believes that in view of the uncertainty of our knowledge in thymic cases, in view of the child's good health and strength, and in view of his almost certain death (scarlet fever, diphtheria or virulent tonsillitis) if the throat conditions are not correct-



ed, the operation should be undertaken. The child was subjected to the ordinary tonsil and adenoid operation. He took a perfect anesthetic, bled very little and made an absolutely perfect recovery, with the exception that for twenty-four hours following the operation he was perhaps slightly more prostrated than the average. This case shows that some children can take perfect anesthetics and survive operations in spite of enlarged thymus glands, and that conclusions must be formed from an accurate history and careful study of each individual patient.

GITTINGS, J. C., AND DONNELLY, J. D.: **Statistics on the von Pirquet Reaction.** *Archives of Pediatrics*, 1921, xxxviii, 78-81.

The figures reported in this article were collected from the records of the Children's Hospital, Philadelphia, for the past 10 years. The technic employed was the regulation denudation with the von Pirquet borer and immediate application of one drop of pure tuberculin (O. T.) For the past 6 or 7 years, a drop of the glycerine supplied by the manufacturers of the tuberculin has been applied to the control area. Reactions have been determined by the appearances 24 and 48 hours after the application. Twenty-seven patients were found to be tuberculous at autopsy. Of these 16 had given positive von Pirquet reactions and in 11, the test was negative. Among the latter, however, the test had been repeated in only one instance. Apart from the fact that only one retest was done in 10 of the 11 non-reacting cases, the high percentage of negative results must have been dependent in large part upon the stage of the disease at the time the test was made. Of the 11 negative results, 8 were obtained in children who died within 2 weeks. Another patient, not included in the 27, gave a positive von Pirquet reaction and was diagnosed as pulmonary tuberculosis ante-mortem but no lesions of tuberculosis were demonstrated at autopsy.

This result, however, cannot be accepted as an authentic instance of lack of specificity of the tuberculin reaction.

Histological examinations of autopsy material were not made, nor were guinea pigs inoculated. Tables of the tests are given. The series demonstrates against the high percentage of tuberculous infection and the comparatively low incidence of recognizable clinical

tuberculosis in childhood. Additional evidence is adduced to prove that a positive tuberculin reaction does not occur in the absence of tuberculous infection. There should be at least one repetition of the tuberculin test (von Pirquet) if the first proves to be negative.

ABBOTT, A. W.: **Intussusception in Children.** *Journal-Lancet*, May 15, 1921, xli, 279.

In the child, intussusception is ileocecal in 90 per cent or more; in the adult it occurs in this location in only about 25 per cent. In the child no satisfactory explanation of the cause has been demonstrated. The onset is abrupt with marked periodicity in the pains. Hernia is about the only thing that in any degree parallels the symptoms of invagination in children. Diagnosis had greatly improved in recent years. Probably many babies have died supposedly of dysentery or enterocolitis who might have been saved by an early diagnosis and good surgery. The sudden violent pain is followed by collapse in 20 per cent of the cases, and of these nearly 100 per cent have died whether operated on or not. Regularly recurring pains follow the initial paroxysm in 100 per cent. A tumor can be felt in 90 per cent after three hours somewhere in the course of the colon. The fluoroscope gives a picture within twelve hours that is not duplicated by any other known condition in the infant. The stools do not contain feces in 91 per cent. Mucous stools are recorded in 83 per cent. The above indications should establish a diagnosis of intussusception within twenty-four hours after the attack. The pains experienced are almost as regular in periodicity as labor pains, and unlike those of common bellyache or colitis. They are not continuous with exacerbations as in appendicitis. They naturally resemble the pains of other mechanical intestinal obstructions, but all other mechanical obstructions are exceedingly rare in children under five years of age, hernia excepted. Mucous stools would be of the utmost diagnostic importance were it not for the fact that it is almost equally as often seen in dysentery. Blood in the stools adds to the certainty of diagnosis, but it may be absent in 77 per cent until after the second day. The earliest possible diagnosis and operation are imperative. The positive identification of the intussusception by the finger in the rectum is absolutely pathognomonic, but may be



demonstrable in only 55 per cent. It is a late symptom. In cases of collapse it is better to wait an hour or two before operating, to see if heat and appropriate doses of morphin will not restore vitality. In operating, gas or local anesthesia is to be preferred to ether. A liberal incision over the right semilunar line is made, no matter where the tumor is felt. Push out the intussusceptum from below, instead of pulling on the upper bowel. Let the appendix alone, unless unquestionably necrotic or acutely inflamed. Wait until you are sure that the bowel will not regain its circulation before resorting to excision, and then wait a little longer. If reduction is not difficult, return of the circulation is almost certain. In case the intussusceptum is too adherent for reduction, remove the intussusceptum by the Barker method; that is, incise intussusciens after stitching around the neck, clamp off and remove the invaginated portion, suture the two layers of the stump and finally, close the incision in the intussusciens. Do not think that the swelling in the region of the ileocecal valve, after reduction of the invagination, is a tumor.

SECTION ON  
ROENTGENOLOGY AND ELECTRO-  
THERAPEUTICS

KIRKLIN, B. R.: **The Role of the Roentgen Ray in Diagnosis of the Surgical Abdomen with Special Emphasis on its Use in the Gall-bladder and Appendiceal Regions.** *Journal of Indiana State Medical Association*, January 15, 1921, xiv, No. 1, p. 1.

Gall-stones are demonstrable with the x-ray in from 60 to 90 per cent of cases; the dense calcareous stones are far in the minority, the majority being a cholesterin nucleus with a calcareous coating. The pure cholesterin stone is impossible to demonstrate; the majority of stones have a small amount of calcareous deposit which can be diagnosed with the use of careful technic. Some of the cases of gall-stones and cholecystitis give no symptoms of gall-bladder disease, merely obscure gastro-intestinal symptoms; but we can demonstrate a thickened gall-bladder, also a cholecystitis with adhesions with the aid of a barium meal. It is also possible to outline with the same aid the pressure of the gall-bladder against the stomach, duodenum or colon.

Gall-bladder disease is indicated by the following x-ray findings:

(1) Hepato-fixation of the stomach, the pylorus being drawn to right and upward in a significant manner.

(2) A small area of pain on pressure on the outer side of the shadow of the duodenum. Also a lag in the emptying of the duodenum is found in such cases.

(3) Riedel's lobe of the liver, found following gas distention of the stomach and colon, jaundice not being present, is a sign of especial value.

(4) The hepatic flexure of the colon in an unusually high position is another sign.

The emptying time of the stomach following a barium meal is



much shortened, the outline of the duodenum is especially well seen. This last is seen also in duodenal ulcer.

*Appendix.*—For determining adhesions, it is a simple matter if the appendix fills, and every normal appendix will fill, with the aid of the fluoroscope to palpate the appendix and observe it in action. The one exception to the rule is the case of the appendix in old people, which is atrophied and may be obliterated. A normal appendix should be at least as wide at its proximal end as at its distal end in order to empty properly. It may lie in almost any position but should be freely movable on manipulation, and further should be empty when the cecum has emptied.

Dr. George, of Boston, diagnoses chronic appendicitis by: (1) absence of the appendix shadow, (2) abnormal conditions of position, shape, and size of the lumen, (3) concretions, (4) tender point, and (5) adhesions.

In addition to this we may often find associated with a chronic appendicitis a stasis of the terminal ileum. In studying this region it is necessary to examine both after the ingestion of the barium meal and after the injection of the barium enema.

**Browns, A. G.: The X-ray as a Diagnostic Aid to the Internist.** *Virginia Medical Monthly*. March, 1921, xlyi, 592.

The x-ray may throw entirely new light upon cases; adding or subtracting diagnostic values; confirming or disproving previous physical findings, explaining obscure and poorly understood points. The internist is greatly advantaged, who has frequent conferences with a roentgenologist, who is also the pathologist, in his laboratory. This should be coupled with "return examination" of old patients, for observation of changes or improvement, or for checking up former findings.

**X-RAY EXAMINATION TO THE GASTRO-INTESTINAL TRACT.**—A wealth of information has been disclosed in these studies, which was formerly unknown until after operation. The negative findings, too, have cleared up what was feared to have been serious pathology, and showed to be mere misfunctioning organs.

*Case.*—Man, aged 46, married. Family history showed that father died at 65 of ulcer of the stomach after years of "dyspepsia".

Mother living and in good health at 76 years; one brother and one sister died of typhoid. Patient had measles and whooping-cough in childhood; in youth, sick headaches and stomach attacks; malarial fever with chills at age of 31; rheumatism in shoulder for past two years. Never had influenza, pneumonia, nor typhoid; has had sugar in his urine. Present history: Has fear of cancer of the stomach; attacks of sick headache about three times a month for the past ten years, getting worse; lost 26 pounds in weight. Habits: no alcohol; coffee twice daily; tea in summer, coca cola frequently; aspirin for headaches; incessant smoking of cigarettes; incessant water drinker; always had a large appetite, eats rapidly, is constipated, has pain in the stomach after eating, no hemorrhoids.

Examination: Showed well-nourished man, a few suspicious teeth, slight pyorrhea. Abdomen, pain on pressure in epigastrium but none over appendix. Legs show distended, blue varicose veins. Laboratory examination: Slight amount of sugar in the urine, Wassermann negative, blood leukocytes 8,000, polymorphonuclear 76 per cent. X-ray: stomach about normal, position a little far to the right; hyperperistalsis but fairly marked pylorospasm, causing slow emptying time. The duodenal cap is small, no filling defects. Slight tenderness over gall-bladder area. Stomach empty in six hours, meal entering first part of transverse colon. Twenty-four hour meal reached from cecum to the rectum; only small part of the appendix filled. This was movable but showed rather marked tenderness on pressure.

Diagnosis: Diabetes mellitus mild grade; hyperchlorhydria with pylorospasm; some pyorrhea and oral infection; suspected ulcer of the stomach; chronic appendix; excessive use of cigarettes; rapid eating habits.

*Case.*—Man, aged 53; complains that for the last six months had “gas on the stomach”; was wakened at night by “water and acid brash” rising in his mouth; has burning and pain over his stomach. Lost 54 pounds in weight, had influenza recently.

X-ray examination showed organic obstruction of the pyloric end of the stomach, or in the first third of the pylorus itself. After six hours there was almost total retention of bismuth meal; besides the organic change there was an element of spasmodic contraction at this opening. Diagnosis: ulcer or other pathology; the exact location was not definitely shown by the plate.



KIRKLIN, B. R.: A Plea for a Routine X-ray Examination of the Gall-bladder Region in Every Chronic Abdomen. *Journal of Radiology*, May, 1921, ii, No. 4, p. 1.

X-rays are of invaluable assistance in determining gall-bladder pathology in practically every chronic abdomen.

George states that x-ray diagnosis in gall-bladder conditions have become so accurate that a surgeon should hesitate to operate in gall-bladder conditions or conditions involving the stomach, duodenum or colon, unless he had a preponderance of clinical evidence.

*Gall-stones.*—Gall-stones containing calcium can be detected much more frequently than formerly. The general opinion among x-ray men is that from 60 to 90 per cent of gall-stones will show. Stones of purely cholesterine substance rarely show on an x-ray plate or film, but such stones rarely exist. Most of the stones consist of a cholesterolin center with a calcareous periphery.

*Gall-bladder Disease With or Without Stones.*—The roentgenologists now find that they not only need to search for gall-stones but also search carefully for any direct or indirect evidence of gall-bladder pathology other than stones, and they are developing a careful technic, and making a careful systematic search for any pathology of the gall-bladder, in every case that is referred for an abdominal study. We should be able, by the density of the gall-bladder shadow, to detect thickened or enlarged gall-bladders, whether filled with small stones or bile of a high specific gravity; and by giving the patient a barium meal, cholecystitis with adhesions should be demonstrated, and also the pressure of an enlarged gall-bladder against the stomach, duodenum, or colon.

The patient should be prepared for examination by taking two drams of compound licorice powders at night for three or four nights previous to examination, and should eat no supper the night previous nor breakfast on the morning of examination. There should be from three to six exposures of the gall-bladder region, varying the penetration, time, etc., being careful that the dark room development is for the same length of time, therefore insuring plates of varying densities.

Then a barium meal should be given in the fluoroscopic room and careful search made there for any indirect signs. Then three to six more gall-bladder exposures are made in order to pick up any adhe-

sions or pressure involving the stomach or duodenum, or any other findings that might not be caught in the first series of plates. The hepatic flexure of the colon is studied at 24 hours.

A good gall-bladder plate should show a wealth of detail of all structures; one of the most important factors is the absolute stillness of the patient during exposure. The author invariably carefully drills the patient before starting the exposures. The Bucky-Potter diaphragm is a very valuable asset in this work. There should be a complete clinical history of every case and if the referring physician does not furnish it the history should be taken in the course of the examination.

*Interpretation.*—Every shadow on the x-ray plate which is a gall-bladder shadow represents the pathological gall-bladder and is so reported.

The x-ray findings, following a barium meal are of invaluable assistance in the diagnosis of pathological gall-bladder, namely: 1st, Hepato-fixation of the stomach, the pyloric region being drawn to the right and upward in a significant manner; 2nd, a deformed first part of the duodenum, and possibly the second part, due to adhesions pulling to the right and outlining the gall-bladder; 3rd, outlining the enlarged gall-bladder pressed against the duodenum or antrum of the stomach; 4th, a definite small area of pain on pressure at the outer side of the shadow of duodenum, usually with a lag in the emptying of the duodenum; 5th, pressure of Riedel's lobe of the liver, following gas distention of the stomach and colon, is also a sign of gall-bladder disease, unaccompanied by jaundice; 6th, emptying time of stomach following barium meal is usually much shortened, the outline of the duodenum being well seen owing to the delay in emptying of the duodenum or the too rapid emptying of some of the contents into the duodenum. It was formerly supposed that this unusual visibility of the duodenum strongly suggested duodenal ulcer, but Case reports it may occur in duodenal infection or gall-bladder disease.

*Surgical Investigations.*—It is impossible for the average surgeon to tell by palpation alone if the gall-bladder is normal. Dodd reports a case in the Massachusetts General Hospital where the surgeon at operation and the pathologist at postmortem failed to palpate the stones. Later they were found in the distended bladder.

*Statistics.*—From 421 patients, gall-bladder pathology with or without stones was reported 168 times (40 per cent). Gall-bladder



pathology was suspected by the clinician in less than 10 per cent in 421 cases. Operative findings in 128 cases showed the x-ray conclusions were confirmed in 119 cases (92 per cent).

**HAUBEK, M.: Roentgen Diagnosis of Gastric and Duodenal Ulcer.**  
*Wiener klinische Wochenschrift*, 1921, xxxiv, 159.

The changes in the shadow of the stomach and duodenum are a picture of the anatomical changes of the wall from gastric ulcer. These changes of contour are emphasized by spastic contraction. The loss of substance in the crater of the ulcer is seen in the form of a niche. The large curvature is notched and the stomach is rolled in at the lesser curvature near the ulcer. In ectasis of pyloric ulcer there are bulb-shaped deformities in the duodenal ulcer. The ulcer causes changes in the serosa of the stomach and circumscribed peritonitis. In the first case a point of pressure is projected upon the shadow of the stomach. In the latter case, there is a formation of a zigzag contour and a dextrofixation. A bulbus and duodenal stenosis will remain stationary. The symptoms of irritation, usually of a spastic muscular type, are represented by scalloping of the larger curvature, and paradoxical retention. The roentgen picture further gives information on the size, the hardness, the penetration, the complication with stenosis, either organic or spastic, of the cardia, the bulk of the stomach, the pylorus, the duodenum, adhesions to the neighboring organs, especially of the liver, pancreas, gall-bladder, colon, transversum, the anterior abdominal wall. The pyloric, the pre-pyloric and the duodenal ulcers are harder of diagnosis. The difference between ulcer and carcinoma may be hard to establish. In ulcer, the niche in the shadow of the stomach is more pronounced, in carcinoma less. The hour-glass stomach is indicative of ulcer, the notch in carcinoma is broad and irregular. The antrum deformity hardly enters into the consideration where there is a cause for differentiation between ulcer and carcinoma. In the duodenum the bulbar defect is a sure sign of ulcer because it practically does not occur in malignant tumors. The differentiation between ulcer and scar is somewhat difficult for the roentgenologists. The administration of atropin and papaverin have not proved efficient for the differential diagnosis. A simple small ulcer is not shown up by spasms or

niches or adhesions. More pronounced and protracted functional disturbances are more often seen in the chronic callous type of ulcer. Where there is a combination of gastric hemorrhage with a normal or slightly atypical functional roentgen pictures, erosions must be considered. In neuroses, the clinical disturbances are very much more marked and the roentgenogram may be negative.

Prognosis may be aided if regular examinations by the same roentgenologist are made of the case.

MAFFI, A.: **The Developmental Phases in the X-ray Picture of Tubercular Osteo-arthritis** (Le fasi di evoluzione delle tuberculosi osteoartocilari nella immagine radiologica.) *La Radiologica Medica*, 1921, viii, p. 385.

In judging of radiograms of bone tuberculosis it is necessary to consider the various stages of the disease and their typical changes. In the course of the development, the previous pictures must be considered for comparison, and pictures of the healthy counterpart must be compared with great care. The initial stage will widely differ from the stage of invasion into the joints, from the ulcerative and destructive, from that of deformation, and from that of respiration. The first stage is very rarely detected. In the radiogram, it may appear as a loss of medullary substance, and it may be restored only in the last stages of regeneration. There may be a marked demineralization of the head of the bone which may give the first intimation. In these cases there may be an absence of the shadow found usually at the head of the bones near the joints, and this will give the first suggestion of a decalcification. Calcium always is of great importance for the radiogram. The "vitreous atrophy" shows a characteristic picture which cannot be confounded with any other bone atrophy. The atrophy of rickets is symmetrical, and extends to regions different from those of tuberculosis. It is accompanied by deformation at typical points. In vitreous atrophy we see the tissues changed from the onset. At a later stage the dense tissues become less opaque. Sometimes some parts of the structure are more visible than the rarified tissues. Sometimes, however, the rarification shows up more distinctly. Everything in the picture depends on the density and varies as to proportions and distinctness. Some types of bacil-



lary atrophy will cause an elongation of a joint. Sometimes this elongation is due to scoliosis. In some cases the elongation is caused by sponginess, which will broaden the inner articular line. These are rare cases and are well distinguishable in the radiogram. Comparison with the healthy side will aid. If the bacillary toxins create a focus near a center of ossification, the ossification of certain parts of the epiphysis may be changed. It is often seen in the so-called white tumefaction of the olecranon, the malleolus, large trochanter and the tibia. Usually asymmetry is marked. The diagnosis of the articular and extra-articular lesions must be made by clinical manifestations.

In adults, the decalcification will be more marked in the radiogram than in the child, owing to the greater density of the bone. In soldiers the author often saw obsolete tubercular bone lesions. The shadows in the radiogram would be gray, owing to the gray diminution of the mineral salts. Usually, however, there is an entire destruction in the adult, especially in the deeper foci, and in the large joints of the adult. The borders of the destroyed area are usually very distinct. It is remarkable, however, that destruction of the coxa or Potts' disease, will not show up very clearly in many cases.

The author has seen many tubercular lesions of the joints start in the synovial membrane, but he thinks, from his radiological studies, that the majority of cases start in the bone. The small superficial foci may be well observed by the radiogram (spine, carpus, tarsus).

In children, tuberculosis of the calcaneum is very frequently bilateral and usually associated with lesions in the small bones. In the knee, the articular surface will often be smooth and therefore the articular space will stand out clearly because the interarticular line is widened. Often the cartilage is swollen, and fungus growth may distend a capsule. At this stage, the picture of the synovial membrane and the bone may resemble each other. The two articular heads are more transparent compared with the healthy side, demineralization may be more marked than it is in the epiphysis and the diaphysis may be elongated. The periosteum will be diminished. Often the medullary canal will appear larger. In some cases the epiphyses are enlarged, and the distance from the bony to the cartilagenous shadow will be increased. The articular space may present an enlargement of the light space amounting to 2 mm. In the initial

stage the bony heads entering into the articulation are enlarged. All bones which enter into the articulation are swollen.

During the ulcerative stage, there will be a change in the line of the joint. It may appear like a wasting which would cause a space. In all cases the bones are more transparent while the ulceration lasts, and the contours are changed. Usually the changes from ulceration are seated more deeply. These abscesses will appear like little nests in the radiograph. There is a certain modification in the transparency. The cartilage of the epiphyses and the bony nuclei also becomes more transparent.

During the period of deformation, the radiogram will be very satisfactory, especially if taken from various points upon various levels. During the time of reparation there is a recalcification, and the dense zones between the bones which enter into the articulation will be approximated. The light spaces diminished.

Rowe, E. W.: **A Comparison of Important Factors in the Diagnosis of Gastric and Duodenal Ulcer.** *Journal of Radiology*, May, 1921, ii, No. 4, p. 14.

Every ulcer case history contains a syndrome of ulcer between laboratory tests, secondary though essential. They determine the secretory function, which is of great value in the treatment. The determination of motor function is most important. The x-ray shows this with great ease and accuracy; also revealing the anatomical effect of an ulcer and locating this in the duodenum or stomach.

Etiology has been variously discussed in relation to trauma, thrombosis, and chemical theories; the infectious theory has assumed, rightfully and easily, the preference. This is shown by animal experimentation, the presence of foci of infection elsewhere in the body and finding of streptococci in the ulcer tissue.

History shows that gastric ulcers occur twice as frequently in the male as in the female. The average of gastric ulcer age was 47. Patients with duodenal ulcer are found four years earlier.



*Symptoms.*—Pain occurring periodically, gives rise to chronic distress with free intervals. At first attacks are in Spring and Fall, when the periods are short. Every attack is clear-cut and lasts from four to six weeks. Pain is located in the epigastrium to the right of the center. Hunger pain is found corresponding to the painful area. The nearer it is to the pylorus the shorter the period after eating before it begins.

Duodenal ulcers cause pain three or four hours after the intake of food. Soda, food, posture, or vomiting give relief. Such patients may fear to eat, though hungry. General abdominal distress, if present, is relieved by defecation and belching.

Vomiting of blood is important but not the rule; tarry stools seldom prove evidence of value. Nocturnal pain occurs in about 2 per cent of the cases. Gastric ulcer symptoms are like the duodenal, except they may be less severe, and less sharply defined, hence less accurate. The location cannot be made on the basis of history alone.

*Physical Findings.*—Positive findings follow the history fairly well, but they are less distinct and not especially important when taken alone. A tender point in the epigastrium over the painful area is definite, localized, and constant; muscle rigidity is slight if present. Rarely can an ulcer be palpated. When palpable, the gastric mass nearly always means malignancy. Outlining stomach margin is inaccurate; inflation gives a little idea of actual size.

A physical examination should be complete in order to rule out tuberculosis, chronic nephritis, tabes, and other diseases with gastric symptoms. All possible fields where foci of infection might be found should be included.

*Clinical Laboratory Findings.*—First, the motor activity is most valuable, conforming to the ulcer syndrome in the history; gastric distress from ulcer reveals increased peristalsis and muscle activity in the stomach wall. Second, the secretory curves obtained from the gastric contents by the Rehfus tube, are valuable; much more can be told by graphic representation of a full gastric cycle than by a single examination. In two-thirds of the cases with hyperacidity, ulcer will be the cause; in the remaining one-third, the cause will be secondary to gall-bladder and appendix. Third, blood is nearly always present in traces in a chemical analysis of gastric contents or feces. Chronic ulcers do not often bleed. To be of value, the blood should be found

in definite quantities and constantly present, and then it generally means cancer, not ulcer.

*X-ray Findings.*—There should be a correlation between the internist and the x-ray worker; careful collaboration of history, physical findings, chemical analysis and x-ray study. The normal stomach must be kept clearly in mind. The findings, if positive, are generally definite and quickly seen. Acuteness of observation is lost by prolonged study.

Roentgenograms are important at set stages of different phases of form and motor activity. The fluoroscope is essential to connect these phases; it also keeps touch with cleverness and knowledge of technic. Technic influences, very much, the value of the evidence. The human element enters in to an enormous degree.

The cardinal points and gastric examination may be listed as defects in outline, using the following descriptive terms: filling defects, projections, niches, diverticula, hour-glass deformities, and spasms; ulcer changes are easily seen on the greater and lesser curvatures, less often on the posterior wall. Fully 90 per cent are found in positions easy to locate. The same is true with duodenal ulcers; 90 per cent are found in the first inch and a half of the duodenum. There are indirect signs of gastric and duodenal ulcers. These demand more exacting study. Obstruction is due to actual tissue contraction in less than 10 per cent of the cases.

Every patient with an ulcer should be studied at least once a year. No patient should be subjected to an exploratory operation until a complete examination has been made. A negative diagnosis of ulcer is a most convincing argument that there is none present. An ulcer larger than a quarter situated on the stomach, tends to cancer in 60 percent of cases. Barring extreme ptosis, a residue at the end of six hours means pathology, and if a search is rigidly made the reward is certain.

Gastric ulcers may disappear under treatment; but chronic indurated ulcers of duodenum never disappear.

The x-ray examination should be made when any serious disease of the gastrointestinal canal is suspected, in all patients of the cancer age, in all long-standing gastric disturbances which do not yield to treatment, and in neurotics, to encourage their treatment.



STEWART, W. H.: Some Interesting Roentgenographic Observations in the Differential Diagnosis of Bone Syphilis. *Archives of Dermatology and Syphilology*, May, 1921, iii, p. 702.

"Of all the disease which involve the bone, syphilis is the one characterized by its atypical forms." A correlative history and laboratory findings must be substituted in the roentgen-ray examination. The congenital and the acquired form show distinct varieties, the periosteal and the endosteal. In addition there is a lesion which involves the epiphysis. The epiphysial variety is not common. It produces a peculiar disarrangement of the configuration at the epiphysis. Patches of calcification occur at the epiphysial line with irregularity. Roentgenographically there is a sort of seriated appearance. In the flat bones the lesion is generally of the periosteal type. Syphilis of the long bones usually begins at the end of the diaphysis and in the shaft. The opposite is true of tuberculosis which occurs most frequently in the epiphysis. The periosteum is most easily involved in syphilis. Syphilis is distinctly characterized by production, whereas in tuberculosis there is destruction. With the production there is always hypertrophy. In tuberculosis there is atrophy. The swelling seen in syphilis is almost entirely in the bone substance itself. In tuberculosis it involves the soft parts more particularly. Sinuses are common in tuberculosis but rare in syphilis. In the latter, there is great multiplicity, in the former the appearance is greatly uniform. In syphilitic osteomyelitis, the clinical appearance of the case does not justify the great changes which the roentgenogram shows. In the syphilitic forms of bone disease there is little sequestration and hardly ever involucrum.

## SECTION ON NEUROLOGY AND PSYCHIATRY

MODINOS, P.: **Spondyloses and Spondylites.** *Paris medicale*, 1921, ii, 429.

In the clinical exposition of the author's three cases, it is evident that the first two are of spondylosis, the last of spondylitis. These two must be distinguished under the term infectious spondylitis or typhic spondylitis. Gibney described for the first time in 1889, Schaffer in 1890, Osler in 1894, and later Castillet and Lombard and others, an inflammatory condition of the spinal cord, involving rather the periosteum and the ligaments than the bone itself. All these observations about seventy in number, have been reviewed in the work of I. Bonhouse who reaches the following conclusions: Typhic spondylitis is a complication of typhoid fever due to the localization of Ebert's bacillus in the spinal cord. It is observed between 15 and 35 years of age. It makes its attack usually during and after the convalescence. The usual seat of the lesions is the lumbar column. The most constant symptom is pain, spinal and irradiated. But the spondylitis has not an autonomous existence. All its signs—rachidian osteoarticular (rigidity and painful bony places), radiculo-medullary signs (compression and irritation, pains irradiated into the lower part of the body, hyperesthesias, exaggeration or sometimes abolition of the reflexes)—all these general symptoms are found singly or in combination in most of meningo-radicular syndromes, and it is known that the meningo-radiculites have a well established existence both clinically and anatomically. As to the pathogenesis of rhizometric spondylosis the authors consider it a trophoneurotic trouble analogous to osteomalacia and acromegaly. Spondylites are cured by a symptomatic treatment; spondyloses are rebellious to all



treatment. In his 2 patients the author tried lithium preparations, iodine in all its forms; sulphurous baths, iodine injections, injections of fibrolysin in large doses and also of mesothorium, ionization with the salicylic element and lithium, and radiotherapy. All were useless. The case reported was a man of twenty-three years, complaining of pain in the back and lumbar region. He walked with a slight kyphosis, the head lowered. To lift an object from the ground, he is obliged to bend his knees. There is vertebral rigidity of the dorsal and lumbar region. The neck is completely free, also the coxofemoral articulations. There is a history of fever of a month and a half's duration, diarrhea and a typhic state. This case the author classified as one of posttyphic spondylitis.

**FRIDENBERG, P.:** Some Ophthalmological Implications of Endocrinology. *New York Medical Journal*, July 6, 1921, lxiv, 38.

A study of the glands of internal secretion takes up essentially valid facts of individual blood or tissue juice mixtures, and dyscrasias to explain the personal variations in reaction to diet and drugs, infection and immunity, fatigue and food, as well as to mental and emotional stimuli. The endocrine system is related to the vegetative nervous system and refers to the glands of internal secretion in their influence to morphology, heredity, function and immunity.

Exophthalmos, or prominence of the eyeballs, is caused by sympathetic irritations, and is a relative vago-paralysis. Graves' disease, in the clinical picture is an exquisite manifestation of ocular sympatheticotonia.

**LEWIS, A. C.:** The Significance of Choked Disc. *Journal Tennessee State Medical Association*, 1921, xiii, 107-109.

In every case of choked disc in which there is a suspicion of a cerebral affection, the fundus of the eye should be examined with an ophthalmoscope. Because choked disc originates in some deep seated affection and is not a local lesion its development is usually bilateral. Two theories of the etiology of this affection are generally accepted at this time—one, the mechanical-pressure theory of Manx

Schmidt-Rimpler; the other, the inflammatory theory of Leber. The mechanical theory supposes that a high intracranial pressure retards the return flow of the lymph from the optic nerve sheath to the brain. Distention of the sheath follows and fluid is forced into the ocular end of the nerve. The retinal vessels become strangulated along with the intra-ocular portion of the nerve and edema of the disc follows. The inflammatory theory "assumes that the fluid in the nerve sheath excites a neuritis by conveying pathological material into the optic nerve behind the eye. Halstead says that whether the process in the nerve and nerve-head is inflammatory in nature (as evidenced by round cell infiltrations, exudate, edema, hemorrhages, increase of nuclei) or merely a passive congestion and edema, it is certain that in a great majority of cases, and particularly those in which an intracranial pressure is demonstrable, decompression operation lead to retrogression of the eye conditions, and even to the complete or almost complete recovery of vision in eyes previously nearly, though rarely quite, blind. The term choked disc should really be reserved for cases of noninflammatory edema of the nerve head and should not be applied to true neuritis where there is an active inflammation. It is usually applied, however, to any swelling of the nervehead which reaches an elevation of 1 mm. Among the causes given for the mechanical compression of the cranial contents with the production of choked discs are tumors, inflammatory products, depressed bone, excess of cerebrospinal fluid, blood, etc. Choked disc may be due to meningitis, syphilis, and disease of the nasal accessory sinuses; mastoid operations involving the jugular vein are lateral sinus are said to cause it. It is of common occurrence in acute hydrocephalus. Most cases of choked disc are undoubtedly caused by brain tumor. It occurs in from 80 to 90 per cent of tumors of the brain and has come to be considered almost a pathognomonic sign in these cases. The ophthalmoscopic picture of the papilla or discs in a marked case of papillitis or choked disc is spectacular. The color is white, grey or reddish and is mottled with white spots of exudate or red spots of hemorrhage. The outlines are not distinguishable, exudate extending beyond them into the retina. This gives the nerve head an appearance of greatly increased diameter. The swelling causes the nerve head to resemble the head of a mushroom. The projection above the level of the surrounding retina may be 5 or 6 diopters (about 2 mm.). The arteries appear thin and small, while the veins



are dilated tortuous and dark, due to compression of the swollen nerve. The blood vessels may seem to be interrupted in their course where they dip beneath the exudate. The hemorrhages may be limited to the area of the swollen papilla, or may involve the retina as well. These vary greatly in size and form. A high degree of edema of the nerve may be visible without any disturbance of the visual acuity. Rapid development accompanied by early loss of vision indicates an inflammatory or toxic condition. The subjective ocular symptoms of choked disc vary greatly and are dependent somewhat upon the variety but more particularly upon the location of the intracranial pathology. One may find normal vision, normal pupils and normal fields, hemianopsia, scotomata, derangement of the color fields, visual hallucinations, transient attacks of blindness or loss of vision.

**McKINLAY, C. A.:** The Effect of the Extract of the Posterior Lobe of the Pituitary on Basal Metabolism in Normal Individuals and in those with Endocrine Disturbances. *Archives of Internal Medicine*, December, 1921, xxviii, No. 6, p. 703.

The basal metabolism was determined immediately before and after the subcutaneous injection of 1 c. c. of "the extract of the posterior lobe and pars intermedia" in twelve normal individuals. In all but one there was a definite rise in the basal metabolism, averaging about 6 per cent. The same test applied to a group of four hypothyroid patients resulted in a slight diminution of heat production in all cases. In 4 patients with probable pituitary disease, all of whom showed an initial subnormal metabolism, the heat production was increased by the injection of the pituitary extract, just as was the case with normal individuals. Four normal individuals were then given an intravenous injection of thyroxin and a week later the basal metabolism was determined before and after a dose of pituitary extract. The increased metabolism in this group amounted to an average of 8 per cent, as contrasted with the 6 per cent increase in normal individuals who had not previously been given the thyroxin. Two patients with myxedema were subjected to the same test but they failed to show any increase. The author believes from these experiments that the ability of pituitary extract to increase basal metabolism is dependent upon the presence of an actively functioning thyroid gland.

and that the increased acceleration of the metabolism in those normal individuals who had been given thyroid extract suggests a synergic action between the thyroxin and pituitary extract.

T. HOWARD.

SPOONER, L. H.: **Diagnosis and Treatment of Neurosyphilis.** *The Boston Medical and Surgical Journal*, November 24, 1921, clxxxii, No. 21, p. 622.

The latest concept is that neurological involvement exists early in the disease. Signs of irritation in the spinal fluid have been demonstrated in from 15 to 18 per cent of cases of apparently cured somatic syphilis presenting no signs of neurological involvement. It is probable that the invasion of the nervous system takes place certainly within the first year or not at all, and early diagnosis is essential. The means for early diagnosis is in our hands and should be utilized in every case of somatic infection. Lumbar puncture should be performed early; not only in the presence of nerve symptoms but also in every case which we are about to pronounce free. The author's practice has been to examine the spinal fluid at a period of at least 6 months following cessation of treatment. Ten cases are reported; of these 40 per cent showed evidences of irritation in the spinal fluid after the patient became asymptomatic and serologically negative. These were treated again, and the fluids of two of the cases subsequently cleared. The others refused treatment. Treatment is by intravenous method only and in stubborn cases is reinforced with salvarsanized serum intraspinally.

M. M. BANOWITZ.

BARNES, G. E.: **Transient Heterophoria and Strabismus in Neurasthenics.** *New York Medical Journal*, 1921, lxiii, p. 148.

"It is fairly well known that neurasthenic patients often have an irregular activity of the ciliary muscles." These patients, at least in rare instances, show a condition which is believed by the ophthalmologists who examine them to be an ordinary strabismus or heterophoria. "If one is familiar with neurasthenics, it is not difficult to



explain these transient deviations, for they are merely instances of the irregular manner in which some of them innervate and energize the various muscles of their bodies. This can be easily observed in their walk and in the use of their arms. Instead of sending the correct amount of nervous force into the various muscles concerned in a given act, they send into certain muscles an unduly large amount of nervous force, and jerky, incoördinated actions result."

Prisms in the glasses of these patients having temporary muscular deviation are very objectionable, and operations on their muscles are more so.

"The ophthalmologist should be familiar with prevalent neurasthenic conditions, should know the nature of neurasthenia (1 to 4), and not attribute such a thing to so-called intestinal autointoxication."

When these muscular deviations are found, in neurasthenics, the ophthalmologist should try to prove their nature, make patient as much at ease as possible. By exercising the various extrinsic muscles and diverting the attention for a moment the spastic condition may pass off. The administration of general sedatives would tend to diminish but would not necessarily remove the deviation. It is probable that these measures, combined if necessary, with repeated examinations would clear up most of these cases.

KEIDEL, A., AND MOORE, J. E.: **Comparative Results of Colloidal Mastic and Colloidal Gold Tests.** *Archives Neurology and Psychiatry*, 1921, vi, 163-172.

In a group of 203 cases in which the gold and mastic curves were both negative, there was complete agreement with the clinical findings and with the other tests of the cerebrospinal fluid. In only one instance was there a positive Wassermann reaction in the fluid with both colloidal tests negative. Cell counts were not made in all fluids, but in thirteen instances there was an increased cell count or an increased globulin content or both.

The second group included those cases in which the gold and mastic curves were both paretic. Of the 30 patients in this group, only one was presumably nonsyphilitic; this was a case which had been diagnosed as lethargic encephalitis. In 23 of the 29 syphilitic

patients, there was definite clinical and serological evidence of neurosyphilis (paresis 9, tabes 4, unclassified neurosyphilis 10), while the remaining 6 were diagnosed as a symptomatic neurosyphilis on the basis of blood tests and other spinal fluid abnormalities.

The third group consisted of gold syphilitic zone, mastic negative. There were twelve patients in this group, two of whom were definitely nonsyphilitic (one a normal person, one a case of multiple sclerosis). There was confirmatory evidence of damage to the central nervous system in the fluid Wassermann reaction of only two patients, although in three others the globulin test was strongly positive. One of the patients with a positive fluid Wassermann reaction showed a persistently positive blood Wassermann reaction as the only clinical suggestion of neurosyphilis. In the other there was no clinical suspicion of central nervous system invasion. It is possible that the syphilitic zone gold curve in some members of this group may be explained if the gold test was performed three or four days after the spinal puncture. The fluid is usually not collected in sterile tubes, and bacterial contamination may play some part in the production of gold curves of this type. The presence of the curve in a normal patient in whom syphilis can be excluded lends support to some such explanation.

The results permit the conclusions that a paretic type of mastic curve is even less significant of paretic neurosyphilis than a paretic gold curve; that it is commonly obtained in other types of neurosyphilis; and that it may be found, as may a similar gold curve, in nonsyphilitic neurologic diseases.

There is, on the whole, a fairly close parallelism between the colloidal gold and the colloidal mastic tests; when agreement is lacking, the mastic test seems to detect abnormalities more frequently than does the gold.

KIRBY, G. H., AND GIBBS, C. E.: *The Reproductive Glands and Mental Disorder with Special Reference to Dementia Præcox. The State Hospital Quarterly*, N. Y., 1921, vi, 147.

Mott states that he found in 4 cases of dementia præcox with regressive atrophy of the testes that the adrenal cortex was narrow and the cells contained much less lipoid than in other mental cases. As a



result of his studies he has formulated a theory as to the nature of this disease. The postmortem examination of the testes of a series of cases showed that the most pronounced departures from the normal occurred in dementia præcox, paresis and imbecility. In dementia præcox the usual finding is a regressive atrophy of the seminal tubules and a tendency to arrest of spermatogenesis. The spermatozoa when present, show abnormal staining qualities, diminution of stainable nuclear substance, the heads staining with eosin and not with hematoxylin, which would seem to indicate a biochemical change; the changes in the testicle vary in intensity according to the age and onset and duration of the disease, the longer the duration of the disease the more pronounced is the morbid change in the testes. Cessation of spermatogenesis may be due to either failure of some essential element in the blood or to an inherent biochemical lack of durability in the germ plasm. The primary morbid change, it has been shown, in the nervous elements is one of specific nuclear degeneration.

Mott mentions first the general lowered vital reaction of the tissues of the body in dementia præcox, and the great frequency of tuberculosis; and second, the degenerative changes in the cortical nerve cells which primarily affect the nuclei of the neurones, the nerve cell decay is considered to be due to a germinal lack of durability because there is simultaneously a progressive failure of nuclear proliferation in the organs of reproduction.

He regards this disease as a primary nuclear degenerative process with no inflammatory reaction. Although this pathological process is exhibited chiefly in the nervous elements there is a hypofunction of the body tissues generally; he concludes that the cause of dementia præcox would seem to be an inborn germinal defect, the nature of which is not known.

Among 313 patients examined in a few days, 186 consisted of dementia præcox. These cases showed a definitely higher rate of changes of consistency, chiefly softening than did the cases of manic-depressive, these differences perhaps become more significant in the light of the age distribution, since 76 per cent of the cases of dementia præcox were under 41 years of age.

In dementia præcox, out of the 186 cases 56 per cent showed abnormal size, 47 per cent abnormal consistency and 31 per cent abnormal size and consistency.

SANDS, I. J.: **General Paralysis; Presentation of Necropsy Material and Discussion of the Nature of the Disease.** *Neurological Bulletin*, 1921, iii, 72.

This is a case of a man of forty years, of a negative family history and of a roving disposition. He had contracted syphilis in 1908, and had received treatment on and off for about ten years. In 1917 he began to show difficulty in getting along with his work, weakness in his feet, and unsteadiness in his gait. He came to the Vanderbilt Clinic in June, 1918, presenting marked ataxia, bilateral ptosis, absent knee jerks, positive Romberg, unequal and irregular pupils which did not react to light and only sluggishly to accommodation, whose blood-serum gave a 4 plus Wassermann reaction and a paretic colloidal gold curve. He then received twenty-one intravenous injections of arsphenamin, grains 0.4, eleven intraspinal injections of salvarsanized serum and nine injections of mercury salicylate, grains  $1\frac{1}{2}$ , intramuscularly. In September, 1919, he began to show loss of interest in personal appearance, despondency and nervousness, and in October, 1919, suddenly lost the use of his left hand, becoming dazed and confused and had to be taken to Bellevue Hospital, at Manhattan State Hospital. He showed ataxia, Argyll-Robertson pupils, positive Romberg, definite speech defect, restlessness, mild euphoria, memory defect, negative blood Wassermann, negative Wassermann to 0.1 c. c. of spinal fluid and only 2 plus to 0.5 c. c. of fluid, no cells and slightly positive globulin. At necropsy he showed lesions of paresis, marginal sclerosis in spinal cord, right fibrinous pleurisy, chronic passive congestion of all viscera, and chronic nephritis, the immediate cause of death being right fibrinous pleurisy and pulmonary congestion.

As a result of the successful invasion of the brain by the spirocheta pallida, and consequent to the resultant parenchymatous degeneration and interstitial inflammation, there occurs a characteristic train of signs and symptoms, both physical and mental, causing a complete undermining of the somatic and psychic states of the individual, and producing a picture of a distinct disease entity known as paresis, general paralysis of the insane, dementia paralytica, or paretic neurosyphilis. In spite of the evidence of the involvement of the nervous system in a very large percentage of cases of syphilis which have reached the secondary stage, neurosyphilis represents



only from 3 to 5 per cent of all syphilis, and paresis of course would represent a still smaller percentage. The anatomical alterations seen at necropsy and in the microscopic preparations in cases of paresis are quite distinct and definite in the vast majority of cases. The skull shows atrophy, and especially is this seen in the loss of marrow. Often one sees epidural hemorrhages. There is usually seen redundancy and puckering of the dura at the frontal pole, and this is due to the atrophy of the subjacent brain tissue. On incision of the dura and arachnoid, a large amount of cerebrospinal fluid escapes. Macroscopically, the pia shows a milky exudate, most marked over the anterior two-thirds of the brain, over the interpeduncular spaces, and at the ponto-cerebellar angles. The posterior third of the pia appears, as a rule, thin and glistening. The pial vessels are usually congested. In the ventricular walls and in the gyri recti there are seen pin-point elevations commonly spoken of as granulations or "sanding" of the ventricles. There is usually well defined atrophy of the anterior poles of the brain and occasionally it is also seen in other parts of the cortex. The cranial nerves not infrequently show inequality and atrophy and thickened sheaths. The spinal cord in the vast majority of cases shows a thickened pia. Microscopically the lesions are also distinct in most cases. Physically the most striking alterations are seen in the pupillary responses, reflex disturbances, and incoordination, while mentally the deterioration in the personality and the memory defect are the fundamental symptoms in the dementia. The pupils may be unequal, irregular in outline, and may vary in their reaction from mere sluggishness to a typical Argyll-Robertson pupil or to fixed and rigid pupil. Gait may be ataxic. The may show positive Romberg and Fournier's tests. Their speech and hand writing are characterized by the omission of words, syllables and letters. Moderately rapid, medium and irregular tremors are present in the angles of the mouth, protruded tongue and in the extended fingers. Often one finds pyramidal tracts involvement. Atrophy of some group of muscles is not infrequent. Cranial nerve involvement other than the pupillary signs are diminution in the visual acuity and occasional optic atrophy, extra-ocular palsies, ptosis of the eyelids, deafness, difficulty in articulation of labials, change in the quality of the voice, difficulty in swallowing, and protrusion of the tongue to one or another side of the mouth. Convulsions are frequent in the later stages, and the patient is undoubt-

edly in a more advanced condition after each convulsion. Bladder and rectal disturbances are frequent in the advanced cases. The spinal fluid usually escapes under considerable pressure and the true paretic hardly ever has a "puncture headache"; often his headache is relieved by lumbar puncture. There is a pleocytosis, the number depending upon the intensity of the meningeal inflammation as well as upon the site of the inflammatory reaction; it is possible to have a normal cell-count when only the meninges at the vertex of the brain are inflamed or when there is generally a mild inflammatory reaction in the meninges or when the process has petered out and there is present only the result of the acute process. Globulin is invariably present in practically every case. The Wassermann reaction is positive in practically every case of paresis. The dementia is characterized by the deterioration of the response of the individual to ethical, esthetic intellectual and conventional standards. While the paretic is proverbially supposed to be quite grandiose in his mood, the depressed type is not infrequent. The course of the disease is quite chronic, but the average paretic hardly lives more than five years after the onset of his distressing symptoms. The disease is characterized by remissions which are explained by Ehrlich as manifestations of antibody formation. The treatment is outlined.

TIFFANY, W. J.: **Pathological Changes of the Testes and Ovaries in Dementia Præcox.** *The State Hospital Quarterly*, New York, 1921, vi, p. 159.

This must be considered only as a preliminary report, for many interesting problems have shown the necessity of studying not only the testes or ovaries by a variety of methods but also the other organs, especially the endocrines, in their relationship to the gonads. It is not possible to compare the sexes in any series, for the sexual life of the male is longest.

The statements are based upon the examination of material from 87 cases. In the 40 male cases are included: Dementia præcox 11, ages ranging from 18 to 74 years; in three cases (age 69, 47 and 42) with psychoses extending over periods of 34, 17 and 13 years respectively, the testes were noted as normal in size; five cases ages from 18 to 74 years showed marked reduction in size; and two of the cases,



18 to 40 years, had small testes (surely these two were not reduced because of changes due to advancing years).

That the gross appearances and the consistency of the testes are not always indices of the amount of interstitial connective tissue and sclerosis of the seminiferous tubules is shown by these cases; this fact demonstrates the necessity of careful examination of gross material and subsequent microscopical examinations if any valuable conclusions are to be made.

In all of the dementia præcox cases the microscopical examinations of the testes showed an increase of interstitial connective tissue with the exception of two cases, it also shows that increases occur at early age without evident acute inflammatory reaction to account for it. The interstitial cells of Leydig are generally diminished in size and number throughout this series in all types with one exception, the writer is inclined to believe that there is a little more atrophy and loss in these cells in the dementia præcox cases than the others, also pigment in the Leydig cells is perhaps less in this group taken as a whole.

All of the cases, with one exception, showed reduction or complete absence of spermatogenesis, cases in which the psychosis has developed at an early age show more tendency to have loss or reduction of sexual function than those which develop later.

In the 47 female cases are included: Dementia 15, five of which were over 50 years. None of the ovaries of these cases were considered normal, but in one case, 48 years, was there apparent complete regression; two other cases, 47 and 45 years, showed almost complete loss of follicles, each of these cases had been insane for 19 years. The youngest case was 19 years of age, her ovaries showed a marked connective tissue increase and only an occasional small undeveloped graafian follicle was found. One case, 28 years old, of 5 years duration, showed practically complete sterility.

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# INTERNATIONAL MEDICAL DIGEST

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## SECTION ON GENERAL MEDICINE

BAINBRIDGE, W. S.: **The Thyroid Gland and the Toxemias—Special Relation to Intestinal Stasis.** *Illinois Medical Journal*, January, 1922, xli, No. 1, p. 1.

The author emphasizes the effect that toxic conditions, especially those arising in the gastro-intestinal tract, have on the thyroid gland. In chronic intestinal stasis putrefaction and autointoxication cause an instability of, and at times wasting of the gland. After colectomy the gland increases in size.

Like Powell and Chapple the author believes that "alimentary toxemia" is the basic cause of many goiters for there are cases of goiter which have diminished in size or disappeared as a result of medical or surgical measures which had the effect of draining the intestine.

The author groups his cases into seven classes:

*Class 1:* Mild types of thyroidism which clear up when the toxic elements of the system are removed as (1) the atrophic gland with a small isthmus and (2) the hypertrophic gland.

*Class 2:* Hyperthyroid conditions may be present for a long time, until a sudden nerve strain, a fright, or an aggravation of the toxic elements may cause acute and pronounced symptoms, often with obvious goiter.

*Class 3:* Cases in which the thyroid is so atrophic that treatment for toxic conditions above will not relieve the patient and thyroid treatment must be instituted and sometimes indefinitely.



*Class 4:* Cases of chronic hyperthyroidism with marked increase of thyroid activity, because of an acute or subacute abdominal condition. Operation upon alimentary tract is curative.

*Class 5:* Cases in which degeneration of part of the gland has occurred and irritates the remainder, causing hypersecretion. Operation on the goiter is necessary to lessen the abnormal stimulation of the gland.

*Class 6:* Cases of pronounced "systemic goiter" as the author calls it, where operation on the thyroid and intestines is indicated to effect a cure.

*Class 7:* Cases of marked hyperthyroidism (large or small gland) demanding operation on the gland.

G. H. LORDI.

CHRISTIAN, H. A.: **Pernicious Anemia.** *International Clinics*, 1922, i, 32nd. Srs., 13-14.

How are we going to treat a patient with pernicious anemia? We apply general hygienic methods, with particular attention to the patient's nutrition, pushing his diet, using fresh air, etc. In a certain number of cases giving hydrochloric acid improves gastric digestion, checks diarrhoea and the patient begins to improve. Iron and arsenic in their various forms have had extensive use. The general consensus of opinion seems to be that arsenic is more effective than iron. Periodically various forms of subcutaneous and intravenous treatments with iron and arsenic are enthusiastically advised. Critical examination of the results suggests that neither iron nor arsenic are of much actual use in these cases.

A short period ago there was a tremendous amount of enthusiasm about splenectomy. At present there seems to be a growing consensus of opinion that splenectomy occasionally produces a remission when prior to splenectomy there had been no remission, and that possibly it had been a determining factor in producing the remission. Beyond this, few at present make any claim and splenectomy is relatively little used.

In just the same way there has been great enthusiasm in regard to transfusion in these cases. Blood transfusion undoubtedly temporarily replaces a blood deficit and so temporarily improves the patient.

It is now recognized that the life of the red blood corpuscles transfused into the pernicious anemia case is considerably longer than we had previously thought. Evidence of the presence of the transfused corpuscles in considerable number can be found from 90 to 100 days after the transfusion. From this it seems rational to believe that the transfused blood will persist for some time, and as these corpuscles remain in the circulation, they probably function to benefit the patient. In a certain number of cases it seems as if transfusion starts a new cycle of activity in blood formation on the part of the recipient and so institutes a definite remission. However, a final analysis of transfused patients indicates that the length of life in these patients is probably not much greater than in patients not receiving transfusion. Transfusions, however, remain our best means of temporarily meeting the situation and they should be advised as a means of treating pernicious anemia even though we recognize the limitations of the method and grant that they are in no sense curative.

The theory that pernicious anemia is due to an infection, already mentioned, has stimulated the search for and the removal of focal infections in these patients. If there is a definite focus of infection there is but little question that it is damaging to the patient with pernicious anaemia and so should be eradicated. However, it is extremely doubtful whether foci of infection play any real part in the mechanism of the disease and consequently it is not probable that their removal will have anything more than a slight effect on the general course of the disease. It is to be recognized that up to the present time no method has been devised which is in any sense curative of pernicious anemia:

PEPPER, O. H. P.: **Postoperative Pulmonary Complications.** *Medical Clinics of North America*, November, 1921, v, 739.

Under the head of embolism, the author takes up infarction. This, he defines, as a result of small particles broken free from the clot in the veins near the operative field, while embolism is applied to the lodgment of larger emboli.

Both embolism and infarction may occur after any operation where there has been marked tissue trauma, by infection and by movability of a part; laparotomy and operations upon the female



genital system give the highest figures. Operations on tissues with a very free venous supply are especially likely to this trouble.

Infarction in three quarters of the cases occurs in the second or third week of postoperative convalescence. The history of convalescence has not been wholly normal. A little daily fever, and in one quarter of the cases a thrombophlebitis in the femoral vein, which has been recognized for a few days before the lung trouble begins. The first symptoms of infarction are a rise in fever, pain in the lower chest more often on the right, some cough, dyspnea, and even hemoptysis.

Because of a beginning pleurisy, the diagnosis is apt to be pleurisy. The condition on the second day shows higher fever with distinct friction rub; later râles appear, dulness to percussion, and suppression of breath sounds. If a mild attack, the whole process is over within a week, though repetition of the infarction or a true embolic attack may occur. Recovery is usual in the majority of cases, and no residual signs remain in the lungs. A moderate leukocytosis is found. Occasionally the process causes a serious localized infection, resulting in an abscess.

In differential diagnosis, embolism occurs in postoperative cases between the sixth and tenth day. It is much more alarming and half the cases die within a half hour. Those who survive the initial attack gradually recover or may die from a second embolism.

**CHEATEE, S. G. L.: A Study of Breast Cancer in Relation to the Cancer Problem.** *West London Medical Journal*, October, 1921 xxvi, 153.

Age, sex, heredity, internal secretions, and nutrition all have their influence in the development of simple and malignant tumors, all of which must be taken into consideration in studying the effect of mechanical and chemical irritations when they induce cell division. It is possible that the cell divisions induced by living agents are the result of chemical irritation. Any sufficient stimulus, mechanical or chemical, will cause the egg to wake up and attempt to divide. Usually this attack is unsuccessful because of the reduced quantity of chromatin present in an unripe egg. In a frog it is necessary to induce the formation of supernumerary cytcenters which push the original nucleus to the edge of the egg, where it can get a

hold on the protoplasm and initiate cell division. There is further evidence from experimental zoology which shows that mechanical irritation of early germ cell causes them to divide.

The writer is of the opinion that these facts establish for all time that mechanical and chemical irritation can and does induce growth. Another factor is the ordinary life, wear and tear on the tissues, and still another, a possible nerve influence. It is an exaggeration to say that impalation of breasts proves an important factor in cancer, but it is a frequent cause of chronic traumatic mastitis, from which recovery takes place at once on removal of the cause, and supplying a suitable and safe method of support of breasts; the nipple, however, should not be bound or pushed backwards.

*Interpretations of Certain Pathological Changes Observed in Breast.*—Troubles begin in the breast by a more or less diffuse benign, diffuse desquamative hyperplasia of its epithelium, usually accompanied by isolated points of inflammation. Sometimes ducts and acini are implicated; at others ducts only, or acini only. The hyperplasia causes distention of ducts and acini. Clinical signs are definite. Breasts are painful, more painful than the fully developed cystic breast; hard cords of distended and convoluted ducts are rolled under the finger on gentle digital examination. The author is of the opinion that this hyperplasia, due to irritation within the ducts and acini, is the direct cause of cystic breasts. Heretofore cystic breasts have been accounted for by chronic inflammatory changes occurring outside ducts and acini. The hyperplasia may occur in the absence of inflammatory change, and inflammatory changes can be present without any hyperplasia of epithelium. Duct obstruction is another falsely proclaimed cause of cystic breasts, as serial sections of glands do not show any obstructing cause. It shows ducts being dilated by this hyperplasia, and although walls are distended, no such expansion is seen in the little narrow acini that open directly out of these ducts. The epithelial cells of the acini are normal, there is no hyperplasia, and therefore no dilatation. The openings of the ducts on the surface of the nipple are the most probable entrance for irritating agents. C. J. Bond has shown how indigo granules can be distributed from the nipple to the acini, and the author has shown how easily foreign material can be disseminated throughout the human gland.

The immediate effect of this hyperplasia is the creation of cysts



and then more complications may accrue. Duct cysts being the more gross and more easily recognized, the author describes the pathological changes observed in them. When these duct cysts have formed there must be great stagnation of their contents, and the action of any irritant will be more undisturbed and capable of acting for a longer period, probably as a direct result of cysts, or liable to growth within them—papillomata and cancer. Papillomata, those connected to the cyst wall by a single stalk of fibrous tissue (uniradicular papillomata), and those connected to the cyst wall by many stalks of fibrous tissue (multiradicular). The latter are more important, and it is impossible to say with certainty whether they are benign or malignant, but very frequently they are malignant and often accompanied by a marked hyperplasia of neighboring epithelium without a central stalk of fibrous tissue. Both varieties are usually multiple. They may exist mixed or pure, respectively, in different breasts, but more frequently they are mixed in the same breast. The ampullæ of ducts are favorite seats for the incidence and growth of the multiradicular papillomata.

According to observations of the author papillomata and cancer respectively do not begin in the largest cysts, which are lined by an epithelium in an atrophied and degenerated state, and which may render it incapable of response to further stimulation. It is the smaller, perhaps latest cysts, in which the epithelium is more active, and desperately important growths begin.

Cancer in duct cysts can be of two types, the papillomatous, and what is called by the author, "lactiform" cysts. In former, beginning is larger, and often in or near the ampullæ; the lactiform variety begins in very small cysts. The papillomatous cancer is not very malignant, but the lactiform type ranks among the most malignant of breast cancers. The papillomatous type may be the only cancer existing in a breast, and the lactiform may be the only type present in another, but types may be combined in the same cancer.

HARR, H. A.: *The Treatment of the Various Types of Nephritis. The Therapeutic Gazette*, September 15, 1921, xlv, ix, 625.

*Chronic Parenchymatous Nephritis.*—Case, man, pale and puffy looking, with edema almost universal from probable loss of compensa-

tion of the heart; history of failing health for the past six months, but no history of acute cause from the beginning of the illness. Urine shows scarcely 16 ounces in 24 hours, with a large amount of albumin and many large granular casts—the findings of a “large white kidney”.

Prognosis is not only bad as to ultimate recovery, but few live longer than a year or eighteen months; death is from some intercurrent illness or from uremia.

Examination shows second sound of the heart accentuated, and blood-pressure about 160 systolic and 110 diastolic.

*Treatment.*—Diuretics must be carefully considered, and water must be given only in amounts sufficient to compensate for amounts lost through the lungs, skin and the limited amount lost through the kidneys. More than that tends to cause anasarca and pulmonary edema. In place of diuretics we must use hot packs with small doses of sweet spirit of niter; keep the skin active, with the patient in bed, on a diet meat-free, especially during an acute exacerbation. In place of niter often 1/100 grain of nitroglycerin, for its dilating effect on the renal blood-vessels, is a benefit. We must be careful not to give potassium salts especially because the diseased kidneys do not readily eliminate it, and when retained it adds to the edema and cardiac depression. For the better handling of the increased starch in his diet, an aid to the digestion may be given in the form of taka-diastase, 5 or 6 grains at each meal.

VAN LEEUWEN, W. S., AND VAREKAMP, H.: **The Tuberculin Treatment of Bronchial Asthma and Hay-fever.** *Lancet*, December 31, 1921, cci, 1366.

Patients suffering from bronchial asthma, have a disordered purin metabolism. Cases are treated with a purin-free diet and calcium chlorid, 10 grams daily, for five days. Walker's protein skin tests were used on 18 cases with positive tests in 4 cases (22 per cent). It was noted that patients who had strong skin reactions after serum injections also gave strongly positive v. Pirquet reactions. The v. Pirquet reaction was tried on 34 cases of asthma with a very markedly positive reaction in 30 cases.

Koch's T. O. A. was used. Treatment was begun with 1 c. c. of



a 1:100,000 dilution. In addition, adrenalin, codein and potassium iodid were given. The asthmatic attacks disappeared after two or three injections. The injections were given once weekly for two or three months. For the chronic bronchitis, autogenous sputum vaccine was used. Twenty-eight cases were treated. Of these, 18 were completely cured, 4 recovered from the asthmatic attacks but had chronic bronchitis, 5 were improved, one case failed to improve, one case remained well for fifteen months. Some who were free from attacks had had asthma previously, for many years. Similar experiments were conducted by Pietrofarte of Naples.

H. JOACHIM.

Koun, W. L.: **The Abdominal Contraction Method of Diagnosis.**  
*New York Medical Journal*, September 21, 1921, cxiv, No. 6, p. 350.

The method is based upon the principle of increased intra-abdominal tension, and the pressure is exerted in a downward direction. It consists in having the patient institute the bearing down act of defecation after having first taken a deep inspiration. As a result, the diaphragm is prevented from moving upward by the closure of the glottis and the abdominal muscles are contracted down while the muscles of the perineum are relaxed, in consequence of which the visceral organs of the abdomen and pelvis are forced downward. During this act the stomach and bowels assume a more anterior as well as lower position in the abdomen and are, therefore, more accessible for study. Inspection, percussion, auscultation, deep pressure, and other palpatory methods may be practised while the abdomen is thus contracted.

The outline of the stomach and bowels are often seen in the abdominal surface and the condition of the abdominal wall is often much better appreciated. Therefore, from the viewpoint of inspection, percussion, and auscultation, this method has a place. In examinations of the vagina for cystocele and rectocele, for other examinations by the vaginal route, and for inspection of the anus, this method will serve its end.

The process of contraction and its unopposing perineal relaxation will serve to demonstrate weaknesses in the abdominal wall, such as ventral and inguinal hernias, diastasis recti, general abdominal

loss of tone, and similar conditions. Visceroptosis will appear more clearly defined in many patients especially fat people. Very often by taking a side glance at the abdomen, the surface contour will define the position and limit of the ptotic or atonic stomach underneath. Profound ptosis and gastric dilatation show their impression very clearly and abdominal asymmetry due to tumors will often demonstrate itself. In spite of the contracted abdominal muscles, palpation may reveal a ptotic kidney or liver that was impossible of palpation through other means, such as forced inspiration or expiration. Percussion over the contracted abdomen often enables us to outline the stomach more distinctly and to differentiate stomach from colon tympany more clearly. It seems that the stomach is wafted forward. Abdominovaginal or abdominorectal palpation during the application of this method will also facilitate the examination of the fallopian tubes, ovaries, and uterus.

In acute diseases of the abdomen, where muscle rigidity has already established itself, this superadded contraction effort seems to aggravate the existent tenderness or pain. In cases where patients complained of subjective abdominal pain, independent of palpation or deep pressure, this voluntary contraction had a tendency to augment it, whereas, where pain or tenderness was experienced only upon palpation, additional muscle contraction did not influence it, except in a favorable way. Muscle hyperalgesia, which bespeaks disease or disturbance in a visceral organ that segmentally corresponds to the nerve distribution in the muscle, may also become better understood.

Although there is nothing new about abdominal contraction, there does seem to be something new about its use in abdominal study.

J. ROSE.

GOTTLIEB, M. J.: **The Endobronchial Treatment of Bronchial Asthma and Asthmatic Bronchitis.** *New York Medical Journal*, September 21, 1921, cxiv, No. 6, p. 333.

Endobronchial treatment is the most valuable procedure at our disposal for treating cases of asthmatic bronchitis and bronchial asthma where the elimination of the allergic substances and vaccine



therapy, combined with the other measures have failed to produce the results desired. Astringents, such as 10 per cent silver nitrate and tannic acid, have not only the property of temporarily dilating the lumen of the bronchial tree but also, when applied often enough and at short intervals, weekly, have the effect of rendering the mucous membrane less susceptible to infection. It is not possible in every case to have the patient submit to weekly bronchoscopies as the procedure is trying and disagreeable. Some of the orthoform and tannic acid mixture deposited in the main bronchus finds its way into the smaller bronchi by aspiration.

J. ROSE.

DRUCK, C. J.: **Causes of Internal Hemorrhoids.** *New York Medical Journal*, September 21, 1921, cxiv, No. 6, p. 340.

Internal hemorrhoids are varicosities of the superior hemorrhoidal vessels and begin at the points of anastomosis between the portal and the caval systems. There are two types, the small capillary and the large venous.

A capillary hemorrhoid varies in size from a bean to a pinhead. It is an arterial naevus, spongy and resembling a strawberry. Gentlest examination or the passage of feces may start hemorrhage.

This tendency to profuse bleeding makes a capillary hemorrhoid more dangerous than the venous. The capillary piles do not protrude or cause pain or discomfort. Hemorrhage is the cardinal symptom.

The venous hemorrhoids are more common. The pile may appear a half to an inch across its base and covered with a glistening mucous membrane. They are situated in the submucous connective tissue, and are located one on each side of and slightly in front of the posterior commissure and on the right and sometimes left of the anterior commissure. Sometimes the whole anal ring is a mass of varicose veins, especially when due to diseases of the heart, liver or kidney.

Internal hemorrhoids are brought on by anything that increases the local blood-pressure. The erect posture in man is an important cause and so there is the predisposition to the formation of hemorrhoids, and only some little local congestion or inflammation is re-

quired for the varicosities to develop. Therefore proctitis is a very common cause of hemorrhoids.

If proctitis persists as a subacute or chronic form, the hemorrhoids continue and a gradual hypertrophy of the mucous membrane results. This increases the bulk and weight of the mucosa, which separates and slides down on the areolar tissue until it is grasped in the sphincter. The spaces of the submucosa about the hemorrhoid are filled with connective tissue. Later, when the proctitis reaches the atrophic stage, the hemorrhoids remain, because of this connective tissue infiltration which permanently constricts the venous overflow.

The descending fecal mass, acting in the reverse direction on the veins, distorts the latter further and tears more mucosa from the muscular wall. With each bowel movement, the hemorrhoidal mass acts as an obstruction. This increased muscular action drags down the hemorrhoid and the adjoining mucous membrane until they prolapse, thereby increasing the size of the hemorrhoid. Finally when they have attained considerable size, they prolapse and act as foreign bodies tending to excite the sphincter. Such hemorrhoids are the result of digestive disturbances, the improperly digested or fermenting bolus acting as an irritant. Thus, constipation is a frequent cause and drugs used to relieve the constipation (aloes, senna, calomel, gamboge) also congest the rectal circulation. Warm enemas also act in this manner. Certain articles of food, by irritating the mucous membrane, cause increased peristalsis or tenesmus and provoke hemorrhoids (peppers, mustard, sauces, radishes, watercress, tamales, chili con carne and pickles, also alcoholics and tea).

There are other conditions that cause straining or a bearing down, such as stricture of the rectum and urethra, stone in the bladder, enlarged prostate gland, pregnant uterus or a myoma, pelvic exudates, adhesions. The hemorrhoids do not require treatment directly, being dependent upon the underlying condition. All those occupations that increase the abdominal or pelvic pressure will induce hemorrhoids. Desk workers frequently are sufferers.

One other class of positive causes of hemorrhoids is disease of the heart, liver, or pancreas, and syphilis. Since the exciting cause in this class cannot be removed there is no hope of curing the hemorrhoids and a tentative treatment is all that can be undertaken.

J. ROSE.



HAYES, W.: **Laryngeal Tuberculosis; Deductions from Study of 400 Cases in Stonywald and Tucson, Arizona, Sanatoriums.** *Southwestern Medicine*, August, 1921, v, 1.

The past misconception regarding the good results that may be obtained in laryngeal tuberculosis has been because of general lack of knowledge of tuberculosis; failure to examine for and recognize early lesions of larynx; and when found, failure to impress patient with seriousness so physician could maintain rigid control necessary. Reports vary as to proportion of tuberculous patients who develop laryngeal complication. Mullen, of Colorado Springs says statistics vary from 5 to 85 per cent. It occurs three times as frequently in men as in women; explanation given on ground of smoking, inhalation of dust, and occupations in crowded and ill-ventilated places, the male larynx is subject to more strain. Laryngeal involvement occurs most frequently between ages of twenty and forty.

*Etiology.*—Irritation, strain of larynx and lowered general resistance. Bacilli may reach seat of lesion through the blood, the lymph, or sputum. The two former avenues result in deeper infiltration in submucosa, and pressure on superficial layers causes ulceration (ragged granulations). Infection through sputum found in advanced cases with abundant expectoration; cases more superficial, consisting of miliary tubercles; become confluent and form superficial ulcer without ragged granulated base.

*Primary tuberculosis of larynx* does not exist, according to opinion of men having made careful study, or that if it does it is very rare. Lockard questions existence of any primary case, and says normal lungs do not mean the lesion in the larynx is primary, as we must exclude bacillus from other parts of body, especially tonsils and lymphatics.

*Classification.*—Dr. Dworetzky, of Otisville, classifies into *acute type* (least frequent; soft edema; tendency ulcerate; occurs chiefly in advanced stages pulmonary; least likely to yield to treatment); *sub-acute type* (pseudoedema, with moderate tendency to fibrosis; usually benefitted by treatment); *chronic type* (firm infiltration, marked tendency to fibrosis; due to proliferation of connective tissue cells; limited in extent; prognosis for life and voice is good).

*Pathologically* lesions consist of local anemia followed by congestion, infiltration, and ulcer. Disease may be overcome at any stage

and when later stages are present they are either evidence of rapid development, late recognition, or failure in treatment.

*Symptoms.*—In the early stage are subjective, slight tickling or feeling of fullness in throat, hoarseness, voice fatigue, clearing of throat, later increased secretion, increased fever, pain in larynx, pain in ear, dysphagia and finally, dyspnea. Early symptoms are often first suggestion of pulmonary lesion. One report states that 35.4 per cent of early cases had no subjective symptoms.

*Prognosis.*—Unless complicating hopeless lung condition, under treatment the tendency is to become clinically well; with appearance of late symptoms and signs, since these are most always associated with advanced lung conditions, outlook is very grave, but some cases make remarkable improvement.

Laryngeal tuberculosis in most cases is unilateral; about two-thirds show most extensive involvement on side of most extensive lung involvement; areas involved in order of frequency are directly proportional to their exposure to irritation and functional activity,—posterior commissure, vocal cords, arytenoid cartilages, ventricular bands, aryteno-epiglottis folds, epiglottis and sub-glottic space. To differentiate from catarrhal laryngitis, this is bilateral and uniform in distribution; syphilis confirmed by Wassermann; and new growths differentiated by microscopic study of excised section.

*Treatment.*—Primary focus, whether in lungs or elsewhere, should receive all advantages of modern method of treatment. First step in prophylaxis is examination of larynx in all cases of tuberculosis; control of cough; restraint from all excessive use of voice; avoidance of smoking and inhalation of all irritants; correction of any local pathological condition in nose, pharynx and nasopharynx; and keeping larynx clean. Curative treatment depends upon stage; acute and subacute require regular attention; chronic should be kept under periodic observation, and use of an oil spray may be all local treatment necessary. First essential in any long drawn out disease is to get patient in *right mental attitude*; *rest* means mental as well as physical, and is of utmost importance; control of the voice (“on silence”). In the care of laryngeal tuberculosis the ideal condition would be where we could have all our patients under one roof, so examinations and treatments could be performed daily when necessary. Dettweiler, through his firm belief that tuberculous patients could control or at least suppress cough for most part, gave prizes to the



ones who coughed the least, and in handling a laryngeal group it might be a good idea to offer a similar inducement to keep the order of silence. In the absence of deep infiltration or ulceration, or where arytenoids, cords and other parts that are under particular strain during phonation, are not involved, the patient may be allowed to whisper or use the spoken voice to a limited extent. When phonation is permitted its effect must be carefully watched. Patient should be instructed to whisper with as little effort as possible, and effect watched.

*Local Treatment.*—Throat should be kept clean by use of alkaline sprays, administration of which may be left to patient; cough should be restrained as far as possible, and for this purpose various oils containing menthol, camphor, wintergreen, or the oil of pine needles are useful. These may be used in the vaporizer, intratracheal droppers or by direct intratracheal injections. Sluggish lesions, especially ulcers, may be stimulated to heal by direct application of formalin, lactic acid or argyrol. In more severe cases, irritation or pain greatly relieved by insufflation of powders, orthoform and anesthesin; 10 per cent of morphin in bismuth may also be used; cocain should be reserved to the last because of its depressing effect on patient.

The electric needle is useful in stimulating or removing indolent areas; in moderately early cases of ulceration of epiglottis, where the ulcer is located on free edge and progresses in spite of treatment, complete removal of epiglottis has given satisfactory results; in advanced cases, with severe pain and dysphagia, the injection of a few drops of alcohol into superior laryngeal nerve gives marked relief. When lung condition is quiescent the use of the x-ray and tuberculin to stimulate the healing is favorably recommended by some. The use of sunlight, by its direct reflection upon the diseased areas by means of the Verba instrument, seems to have especial beneficial results. Dr. Mills and Dr. Forster (*American Review of Tuberculosis*, 1919) report very favorable results from its use in a small number of cases at Colorado Springs. The writer says in his sanatorium they had not used it sufficiently to form an opinion.

In severe cases of dysphagia the taking of food may be aided by application of anesthetic powders mentioned above; in these cases the ingestion of fluid is usually more difficult than that of solids or semisolids; fluids can sometimes be taken better by having patient hang head over edge of bed, face downward, and drink through a

tube or straw. Fluids may also be given through a male catheter size eight or ten, which is well oiled and pushed through the nose down into the throat. As a rule bland unirritating foods such as puddings, junket, and porridge are taken with least difficulty.

Treatment may be overdone as well as underdone, and this should be judged by observation of results.

The writer makes a plea for the routine use of laryngoscope in routine examinations of all patients, regardless of complaint, in order that early cases of laryngeal tuberculosis may be discovered; and says also in no small number of patients who have tuberculosis which is concealed somewhere else in the body, it suggested to him for the first time in the reflection in his mirror.

**NURNBERGER, L.: Renal Glycosuria As Early Sign for Determination of Pregnancy** (Ueber die Verwendbarkeit der renalen Schwangerschaftsglykosurie zur Fruhdiagnose der Graviditat). *Deutsche Medizinische Wochenschrift*, September 22, 1921, xlvii, 1124.

Frank and Nothmann have recently shown that alimentary glycosuria during pregnancy, constitute a very valuable sign in the early diagnosis of pregnancy. These authors administered 100 grams of grape sugar and traced this sugar in the urine. In 30 cases, pregnancy was demonstrated in the first three months. In no case where the test was negative, did pregnancy exist.

A normal person, given 100 grams of grape sugar will have a blood sugar mirror of 0.07 to 0.12 per cent. Without the sugar appearing in the urine, Frank showed that there was a zone of 0.19 per cent of hyperglycemia which would physiologically cause no elimination of sugar by the kidney. In the pregnant woman, however, glycosuria does appear. The physiological boundary is not surpassed. The spontaneous and artificial glycosuria of pregnancy does not cause any essential rise of the blood sugar mirror. This test may also be used for a differentiation between spontaneous glycosuria of pregnancy and genuine diabetes in the pregnant.

This type of glycosuria is found not only in pregnancy, but also in some conditions which are characterized by labile carbohydrate metabolism, such as hepatic disease, thyroid intoxication, and latent diabetes. In some neurasthenic persons, glycosuria may be produced



in the same manner. The difference between these types of glycosuria and that of pregnancy, is that the pregnant woman will eliminate sugar in the urine, although the blood sugar is normal or subnormal, and which do not surpass the physiological boundaries.

On administration of 100 grams of dextrose, glycosuria is seen in the pregnant (20 to 25 per cent) but only during the first three months. The author had the same results in his examination of pregnant women. He administered 100 c. c. of grape sugar in 500 c. c. of tea, the patient having been submitted to a urine analysis before the administration. After half an hour the urine and blood were examined. They could determine pregnancy in the beginning of the second month.

In cases of miscarriage before the third month, the test would continue positive, as long as the placental still adhered to the wall of the uterus. One day after evacuation of the uterus, the test was negative.

**DYER, M. W.: Strangulated Inguinal Hernia Reduced En Bloc.** *New York Medical Journal*, September 21, 1921, cxiv, 344.

*Case I.*—Man, 54 years, hernia for 15 years, wearing truss, had always been easily reduced. Twenty-four hours before, hernia came down into scrotum, followed by pain and nausea; patient attempted reduction, by hard pressure. Felt hernia slip back, pain was not relieved, nothing had passed by rectum and vomiting had occurred 5 or 6 times. Examination showed abdomen slightly distended, left inguinal ring was normal, right inguinal ring dilated to size of two fingers, right canal empty. Diagnosis of strangulated hernia "en bloc" was made. Recovery was normal.

*Case II.*—Man, 44 years, double inguinal hernia 15 years. Three or four days before, hernia came down; patient reduced it and applied truss. In lower quadrant of left rectum muscle was a swelling, size of tennis ball, tender, and resonant on percussion. Ten inches of small gut were found strangulated in a large sac, communicating with the peritoneal cavity by a narrow neck, deeply situated. Same diagnosis.

*Case III.*—Woman, 45 years, had pain suddenly in abdomen and right groin; never had hernia. Two hours after onset was seen,

swelling was found, size of small orange, with no impulse on coughing; was clearly a strangulated hernia and was reduced; reduction had been sudden and complete, like pushing a button through a button hole. On fourth day, abdomen was slightly distended, showed no evidence of peristalsis during observation for several minutes. On handling abdomen, splashing sound could be heard, giving impression of distended coils of intestines. Radical operation performed.

*Case IV.*—Strangulated umbilical hernia of 15 years duration. Complete reduction was made; 17 hours later pain and vomiting continued, with history of reappearance of hernia shortly after reduction. Radical operation performed with recovery.

DOBSON, J. E.: **Discussion on the Diagnosis and Treatment of Cystitis.** *British Medical Journal*, August, 1921, ii, 305.

Many of the infective conditions of the urinary tract designated as cystitis are prone to spontaneous recovery; some are amenable to drug treatment without any accurate diagnosis being made, so many methods are credited with undeserved results. "In comparatively few cases is the process limited to or has its origin in the bladder. It is important to determine that there is an infection of the urinary tract, and to determine whether organisms are present in the urine. Following examination of the passed urine, a catheter specimen must be obtained; a large number of these, show on bacteriological examination, evidence of contamination. "In obtaining this specimen we at the same time also ascertain whether or not the patient has a stricture".

Rectal examination in the male and a rectal and vaginal examination in the female, is the next step; the urinary meatus must be examined and presence of pus noted.

In abdominal examination, search for distention of bladder, tenderness on suprapubic pressure, tumors, tenderness over appendix, appendix abscess, fecal accumulation, etc.

An x-ray examination of the whole urinary tract is of value to exclude calculus.

Then should follow a cystoscopic examination, preceded or not, in the male by a urethroscopic examination if considered necessary.

The examination should not be considered complete until the



general condition of the patient has been most completely considered; presence of pyorrhea, chronic follicular tonsillitis, middle ear disease, all sources of chronic infection must be considered. In many cases the urinary infections are obviously secondary to a definite lesion of the urinary tract or some neighboring organ. Treatment of the infection must not be lost from sight. Usually no surgical treatment is necessary. Instrumental interference is usually unwise, sometimes cystoscopic; examination must even be avoided. This is true especially in the cases where the infection arises in the kidney. In cases where infection has been introduced from without instrumentation would better be deferred till the acute stage of infection has subsided. Abundant drinks, alkalies, sedatives, and various urinary antiseptics will be used. In some cases lavage will be necessary, for necrosis often threatens the mucous membrane of the bladder. The route usually favored for drainage in such cases is the perineal unless there are indications to the contrary. The drainage with the in-dwelling catheter is futile. The author thinks that perineal drainage should be abandoned, because the wound cannot be kept clean. It encourages a secondary infection. He treats them with a medium-sized suprapubic drain and with bladder installation of eusol through Carrel tubes. The disadvantage in this method is that it is unfavorable to cystoscopy.

Substances which when excreted in the urine will prevent infection or will control infection must be used as antiseptics. Urotropin is the one most commonly in use. There are, however, innumerable failures. It develops formalin in acid urine. Often it causes hematuria.

Lavage should not be carried on with weak solutions. It is useful only as a preliminary treatment for surgical intervention. It is of great value in controlling the infection in cases of enlarged prostate. It is an auxiliary to renal lavage in the treatment of pyelitis and cystitis. Silver nitrate is the best, first 1:20,000, gradually increasing.

Vaccine treatment is useless. That pyelitis and cystitis of bacterial origin is mostly hematogenous, is the general opinion. It is not always the case. These cases often recover spontaneously, or on simple treatment with fluid and alkali. Renal lavage with colargol is very useful.

CRICHLow, N.: **Acute Bacillary Dysentery.** *Journal of Tropical Medicine and Hygiene*, August, 1921, xxiv, 204.

Dysentery can be defined as an inflammation of the large intestine caused by a specific germ and characterized by the passage of blood and mucus in the stools. Bacillary dysentery is caused by a variety of bacilli distinguished from one another by fermentation and serological reactions. The two chief groups of bacilli are the bacillus dysenteriae of the Shiga group and the bacillus dysenteriae of the Flexner group. The means of infection are by the drinking cup, flies, uncleanly habits, infected privies, fouled vegetables, dust and vessels used by dysenteric patients. The predisposing causes are diet, constipation, diarrhea, exposure to cold or wet, malaria or any other fever and sickness that tends to reduce the bodily health, overcrowding and general carelessness in regard to sanitation. These certainly spread the disease and are responsible in causing and maintaining epidemics. The onset in acute bacillary dysentery is generally sudden. The patient first complains of griping abdominal pains, diarrhea and fever. Blood and mucus are then passed in the stools, which become less feculent, scanty and latterly consist of mucus and blood only. The quantity of blood varies from a mere streak in the mucus to pure blood. In some cases the stools are of a dark green color mixed with blood and mucus and very offensive smelling. When the ulcers begin to heal epithelial flakes are seen in the stools. The number of stools varies from six to forty-eight within twenty-four hours. There are griping pains in the abdomen, a continuous desire to stool and tenesmus. The features assume a pinched and anxious expression. The tongue is coated with a white fur. There is nausea and vomiting in some cases. There is generally a rise in temperature at the beginning of the attack. The temperature is of a remittent character during the acute stage. The pulse is rapid. There may be collapse and death. Death in dysentery is generally due to heart failure or exhaustion. Of prognostic value are: (1) the quantity of blood present in the stools; (2) the number of stools passed in 24 hours; (3) vomiting; (4) the temperature—a persistently high or a subnormal temperature is bad; and (5) the age of the patient. There are three modes of treating bacillary dysentery: (1) By serum; (2) by saline aperients; and (3) by saline aperients with serum or with intestinal disinfectants. The



author uses the following line of treatment; rest—the patient is kept in bed and uses a bedpan if possible; diet—the diet consists of milk, rice water, barley water, albumin water and whey during the acute stage. Afterwards, arrowroot, cornflour, sago, beef or chicken broth, milk custards and soft boiled rice are given when the blood and mucus are absent from the stools; drugs—on admission, 1 ounce of castor oil and 20 minims of tincture of chloroform and morphin compound are given. On the following day the following mixtures are administered:

Bismuth salicylate .....	5 grains
Pulverized ipecac compound .....	3 grains
Calomel .....	$\frac{1}{4}$ grain

To be mixed and made into a powder. *Dose.*—Two to four powders every four hours.

These powders are followed by a saline aperient— $\frac{1}{2}$  ounce magnesium sulphate or 1 dram sodium sulphate every morning—and are administered daily until the blood and mucus disappear from the stools. If these powders are administered for too long a period mercuric poisoning may develop. But generally the blood and mucus disappear from the stools within a week. If the case is taken at the beginning of the attack the dysenteric symptoms may be checked within two days. When the blood and mucus have stopped the following powder is then given:

Bismuth salicylate .....	5 grains
Salol .....	5 grains

\* To be mixed and made into a powder. *Dose.*—Two to four powders three or four time a day.

These powders are given for at least a week. As constipation is very apt to result, the bowels are kept open by a mild aperient. In conjunction with the above treatment, emetin is sometimes administered. A third of a grain of emetin hydrochlorid is administered hypodermically night and morning for two consecutive days. In very few cases is there any improvement noticed from these injections of emetin. In some instances it made the cases worse. Rectal injections are found useful. Brandy in milk is given if the patient is in a weak or collapsed condition. If the patient is unable to sleep, 20 to 30 minims of tincture of chloroform and morphin compound is given in  $\frac{1}{2}$  ounce of brandy. Morphin and atropin are sometimes

injected hypodermically. For the relief of abdominal pain, the above is given or hot fomentations applied to the abdomen. The mortality given for acute bacillary dysentery varies from 10 to 40 per cent.

BLACK, S. O.: **Hernia: Traumatic and Strangulated.** *Southern Medical Journal*, August, 1921, xiv, 625.

The author states that in every 1,000 people, 44 per cent will have hernia; there are three in the male to one in the female.

"Increased intra-abdominal pressure is unquestionably a predisposing cause, especially in children. Straining at stool or during micturition, lifting or carrying a heavy weight, prolonged coughing or vomiting, debilitating illnesses, all predispose by increasing pressure at one or more points on the abdominal wall". It is unreasonable to presume that these acts would make the pressure greater at one point than at another, but if there be a weak spot, from some failure in development, this spot will give way first.

"The majority of them are unquestionably the result of a deficiency in development of the abdominal parietes; this may be aggravated as the person ages or grows in stature, by one of the enumerated predisposing causes".

"A hernia consists of its coverings, sac and contents". Coverings depend upon the location of the hernia and the sac is of peritoneum. Once a sac is formed it is almost certain to persist because its exterior adheres to the surrounding structures. The sac thus becomes irreducible in almost every instance. The contents vary, but it is usually a portion of the small bowel, or it may be stomach, cecum, ascending colon, bladder, or ovary.

The contents of the sac can be fairly well judged by bearing the following points in mind: "if on percussion one elicits tympany and finds by palpation a smooth elastic tumor, an impulse on coughing and hears a gurgling sound when the tumor is reduced by taxis, one may be reasonably certain that bowel was in the sac; if the mass be firm, lobulated, dull on percussion, with only a faint impulse on coughing, and no gurgling from reduction, omentum should be suspected first, some more or less solid viscus next; if it be soft, smooth and elastic at one place and firm, nodular or lobulated at another,



with an area of tympany here and one of dulness there, we may deduct the presence of both bowel and omentum".

"Pathologically, hernias are spoken of as reducible, irreducible, incarcerated, strangulated or inflamed. Anatomically they are termed inguinal, femoral, obturator, ischiatic, diaphragmatic, epigastric, umbilical, vaginal, lumbar, etc. Clinically, they are congenital, acquired or traumatic".

"Strangulation in children is rare (DaCosta)".

"Hernia symptoms depend upon the location of the hernia anatomically, and the type of hernia, pathologically".

Traumatic hernia is rare; it constitutes a surgical curiosity. It is characterized by great pain, collapse, nausea, and vomiting. There is a distinct mass, exquisitely tender, which does not disappear upon recumbency, may not be reduced by taxis or by operation. Patterson observes a strong feeling among employers of labor that, under the Workman's Compensation Act, they are bearing the cost of a congenital defect in certain employees, as regards traumatic hernia.

"In a recent series of 31 cases, 9 were of the strangulated type, 7 were males, 2 females".

Symptoms of strangulated hernia depend upon the location and type. If an entire loop of bowel is strangulated pain is more severe, obstruction is more complete, spasmodic colic occurs with increasing frequency and severity, nausea and vomiting follow in rapid sequence and if unrelieved, collapse and exhaustion soon cause death.

If but a portion of the lumen of the bowel be strangulated, and continuity of bowel lumen is not seriously interfered with, symptoms are milder in onset, longer in character; until perhaps the bowel ruptures and peritonitis sets in. "This constitutes the Richter's hernia, described by him in 1778". In the reported cases, 5 were of this type. All gave rise to a "Mass" or swelling, pain, usually constant but with spasmodic paroxysms of exquisite violence, accelerated pulse, a decided leukocytosis and a mild febrile state.

"Each case was successfully operated on; in 5 cases bowel was so dark in color that it was deemed advisable to risk its return to the abdomen, a drainage tube was inserted through an adjacent stab wound. All cases made a complete recovery".

In cases of strangulation, where it is reasonably certain that the bowel is going to perforate, unless patient is in exceptionally good condition, it is better to leave involved area wrapped thoroughly in

vaselized gauze on abdominal wall to be treated with hot applications.

"Practically all strangulated hernias will cause death unless operated upon, provided they are irreducible by manipulation. It has been estimated that 8.09 per cent of all operations performed during the first day after strangulation will be fatal; 22.2 fatal if operated on during second day; 45.5 will die if operated on third day and 60 per cent lost if delayed until fourth day".

WALLIS, R. L. MC.: **Glycosuria in Pregnancy.** *Medical Press*, London, 1921, v, cxi, n. s., 400.

Investigation of the blood and urine in pregnancy, revealed the fact that the cases were divided into two groups—intermittent or transitory glycosuria, and the severe glycosurias and diabetes mellitus.

In the first group, investigation of the urine was confined largely to the question of the nature and amount of the sugar present. Presence of lactose was always excluded, and it was often a matter of some difficulty to decide whether the reducing substance present was sugar or not. "In collaboration with Dr. P. J. Bose a method had been devised of detecting and estimating sugar in the urine in both normal and abnormal amounts. The method depended upon the removal of all interfering substances by means of an acid solution of phosphotungstic acid, and the identification and estimation of the sugar present in the clear filtrate. By means of this test it was possible to determine the nature and amount of sugar present in normal urine. The figure usually obtained was from 0.17 to 0.09 gram per cent, and the total output of sugar on an ordinary mixed diet rarely exceeded one gram per diem. In pregnant women it was possible by this method to determine variations in the amount of sugar in the urine. The blood sugar examination was done simultaneously, and used to determine the nature of the case, as well as to watch the effects of treatment in a severe case of glycosuria in pregnancy. The glucose tolerance test had, however, proved of the greatest value in diagnosis and prognosis. The charts shown illustrated the types of curve found in the transitory glycosuria of pregnancy. These were obtained by giving patient 50 grams of glucose



by mouth and estimating the blood sugar content at intervals of  $\frac{1}{4}$  hour,  $\frac{1}{2}$  hour, 1 hour, 1 and  $\frac{1}{2}$  hours, and 2 hours after the sugar had been consumed.

Plotting the curves together it was found that the glycosuria in pregnancy gave curves identical with those found in true hyperpituitarism. In this group cases of marked obesity, acromegaly, and intermittent glycosuria could be included on the results of the sugar tolerance test. This was a point worthy of further investigation in view of the part played by the pituitary body during pregnancy. Further, it would appear that by means of the sugar tolerance test cases of hyperpituitarism could be detected where no evidence of any skeletal changes or other signs of acromegaly existed. The observations showed that 500 grams of glucose could be tolerated without the occurrence of sugar in the urine, and in consequence this type of case was best treated by leaving it alone. Attempts to restrict the carbohydrates in the diet generally made the patient worse and the appearance of acetone bodies in the urine was likely to be misleading under such circumstances. The differentiation of severe glycosuria from the intermittent type was rendered possible by a simple estimation of the blood sugar. In a normal person the blood sugar ranges from 0.08 to 0.110 gram per cent whereas in severe glycosuria it may be over 0.2 gram per cent and reach such figures as 0.4 gram per cent. The intermittent type, on the other hand, shows a blood sugar content which is either normal or only slightly raised. The treatment of a severe case of glycosuria can be followed by means of the blood sugar and the progress of the disease determined. The results show that the two types of glycosuria met with in pregnancy require to be clearly differentiated, since in one type no treatment is required, yet in the other type the greatest care in the dietary becomes necessary. The association of glycosuria and a hyperglycosmia in connection with menstruation has also been studied.

## SECTION ON

# LABORATORY AND RESEARCH

OLITSKY, P. K., AND GATES, F. L.: **Experimental Studies of the Nasopharyngeal Secretions from Influenza Patients. VI. Immunity Reactions.** *The Journal of Experimental Medicine*, January, 1922, xxxv, No. 1, p. 1.

Nasopharyngeal washings from a case of influenza was inoculated intratracheally into a rabbit A. This animal developed a conjunctivitis the next day and a decrease in white blood-cells, the temperature gradually increased and reached 40 degrees on the third day. After recovery the animal was inoculated intratracheally with a lung suspension from a rabbit representing the fifth passage of the nasopharyngeal secretions of an influenza patient. There was no effect produced.

Of the control rabbits one, B, was injected with the same material as A, and at the same time developed the typical clinical picture with a fall in the leucocytes and a rise in temperature. The animal was killed and autopsy revealed the hemorrhagic edema and emphysema of the lungs characteristic of the disease. Rabbit C served as a control for the second injection of rabbit A, and showed the typical clinical and pathologic effects.

In another experiment a rabbit inoculated with a suspension of rabbit lung from the fourth passage of the nasopharyngeal secretions obtained in the 1918-19 influenzal wave, developed the typical clinical picture and recovered. This animal was inoculated 14 months later with a suspension of lung tissue from a rabbit injected with the nasopharyngeal secretions of a case from the 1920 epidemic. The rabbit developed no signs or changes and when killed showed no lung lesions. A control rabbit here injected with the same lung tissue developed the typical blood picture and lung pathology. Injec-



tion of the lung emulsion made of the rabbit reproduced the disease in another animal.

The active material pathogenic for rabbits and guinea pigs, found in the nasopharyngeal secretions of patients in early epidemic influenza has been identified in the anaërobic organism (*Bacterium pneumosintes*). Additional evidence in support of this is furnished by a number of cross-protection experiments.

Rabbits were injected intratracheally with mass culture of *Bacillus pneumosintes* in saline suspension 15 days after a protective injection of saline emulsion of lung tissue. These showed a leukocytosis and autopsy revealed no visible lung lesions. Control animals injected directly with emulsion of mass culture and those injected with the saline emulsion used above gave typical reactions.

H. M. FEINBLATT.

CARREL, A., AND EBELING, A. H.: **Heterogenic Serum, Age, and Multiplication of Fibroblasts.** *The Journal of Experimental Medicine*, January, 1922, xxxv, No. 1, p. 17.

It has been shown that the inhibiting factor of homogenic serum on the growth of a pure culture of chicken fibroblasts is directly proportional to the age of the animal from which the serum is taken, and that the rate of cell multiplication can be used as a reagent of certain changes produced by age in the blood serum. Similar effects could probably be obtained from fibroblasts of mammals cultivated in homogenic serum.

The authors, ten years ago, found that chick embryo tissues grew abundantly in plasma from rabbits, dogs and human beings, although not quite as well as in chicken plasma.

Recent technical improvements made by Ebeling made possible to cultivate tissues in a medium composed of serum and fibrinogen, and to prepare the cultures and measure the rate of growth with greater accuracy.

The paper describes a series of experiments investigating the relation existing between the rate of growth of a pure culture of fibroblasts and the concentration in the medium of heterogenic serum, and the influence of the age of the animal from which the heterogenic serum was taken on the cell multiplication, in order to ascertain

whether a pure culture of chicken fibroblasts could be used as a reagent for the detection of modifications brought about by age in the blood of animals.

The presence in a culture medium of heterogenic serum of various concentrations exerts a definite influence on the rate of multiplication of fibroblasts. Dog serum does not inhibit the growth of chicken fibroblasts markedly until its concentration reaches 15 per cent. Beyond this figure, each increase in concentration brings about a rapid decrease in the rate of cell multiplication. Cat serum at a concentration of 25 per cent showed beginning inhibition. No further growth took place when the dog serum concentration rose over 30 or 45 per cent, or the cat serum over 50 per cent.

The inhibiting activity of the heterogenic serum was found to vary in direct ratio with the age of the animal from which it was obtained.

The rate of proliferation of chicken fibroblasts expressed by the growth index of the serum can be used as a means for detecting certain changes brought about by age in heterogenic serum.

H. M. FEINBLATT.

STILLMAN, E. G.: **The Frequency of *Bacillus Influenzæ* in the Nose and Throat in Acute Lobar Pneumonia.** *The Journal of Experimental Medicine*, January, 1922, xxxv, No. 1, p. 7.

During the recent epidemic of influenza 1918-19 and in the succeeding winters cultures were made from the throats of 1,077 normal individuals, and influenza bacilli were demonstrated in 332, or 30 per cent, of those examined.

Cultures made from the nose rarely showed the organisms in normal individuals—and but seldom in persons suffering from coryza or laryngitis.

In marked contrast with these findings were the results obtained in a series of cultures made from the nose and throats of patients suffering from lobar pneumonia during the winter of 1920-21. Thirty-five cases were studied, cultures made from the throats, in thirty-one cases showed the influenza bacilli in 18, or 58 per cent. Cultures from the nose made in 35 cases showed the microorganism in nine or 23 per cent. In certain other cases the organism was isolated



from the sputum. In all the 35 cases the influenza bacillus was isolated from one of these three sources in 30, or 85 per cent of the cases.

In searching for *Bacillus influenzae* the author has also noted the presence or absence of the pneumococcus. In cultures from the nose in 22 normal individuals it was possible to isolate the pneumococcus in only one instance. Cultures made from the nose of 13 cases of coryza and laryngitis and 2 cases of encephalitis lethargica in no instance showed pneumococci.

Cultures from the nose in the 35 cases of lobar pneumonia showed the pneumococcus in 15 instances. The organism was in every instance of the same type as that isolated from the sputum.

The influenza bacilli isolated reacted differently biologically and are of various types.

H. M. FEINBLATT.

PEARCE, AND BROWN, W. H.: A Study of the Relation of *Treponema Pallidum* to Lymphoid Tissues in Experimental Syphilis. *The Journal of Experimental Medicine*, January, 1922, xxxv, No. 1, p. 39.

In a series of experiments, emulsions, from the inguinal lymph-nodes of 26 rabbits, previously inoculated with *Treponema pallidum*, into the scrotum, produced a syphilitic orchitis when injected into the testicles of normal rabbits. In only one out of 46 rabbits inoculated did a progressive orchitis fail to develop, and in this instance, the orchitis was the atrophic type. In contrast to the high infectivity of the node emulsions is the small number of spirochetes present in the nodes, since organisms were demonstrated in only three out of 29 emulsions on dark-field examinations.

Spirochetes were regularly recovered from the inguinal glands by animal inoculation after scrotal inoculation; they were present as early as 2 days, when no specific primary reaction was detected, and at later periods from 5 to 61 days after inoculation. Other superficial nodes at remote sites such as the popliteals and with no syphilitic lesions in the drainage area were shown to harbor organisms.

The experiments show that the syphilitic infection is sufficiently established in the rabbit body within 48 hours after scrotal inoculation so that the primary lesion is no longer essential for its maintenance.

The organisms were recovered from the popliteal nodes over long periods of time and in cases of true latency. The lymph glands serve as reservoirs of the treponema. The existence of infection in the rabbit in the presence or absence of syphilitic lesions can be demonstrated at any time by recovery of the spirochetes from the popliteal lymph-nodes by animal inoculation.

The experiments demonstrate that the disease is not confined to the site of local inoculation but that lymphogenous dissemination of treponema regularly takes place, and that during the progress of this process organisms become localized in the lymph-nodes and exist there indefinitely irrespective of the occurrence of manifestations of disease. The intimate relation of *Treponema pallidum* to lymphoid tissue is an essential concept of syphilis in the rabbit, and from this point of view the infection is primarily one of lymphoid tissue.

H. M. FEINBLATT.

PATON, D. N.: **A Note upon the Significance of Digestion Leukocytosis.** *Lancet*, January 7, 1922, cci, No. 5132, p. 15.

Digestive leukocytosis was first described by Moleschot in 1854. It was thought to be due to increased production of leukocytes from the lymphoid tissues of the intestinal walls produced by the action of proteins. Goodall, Gulland and Paton found that there was no difference in the leukocyte count of the intestinal arteries and veins. They, therefore concluded that the increased production could not take place in the intestines. The source is probably the bone-marrow. Leukocytosis may be a defense reaction to prevent an overflow of amino-acids from proteolysis into the plasma.

H. JOACHIM.

GATES, F. L.: **Studies on Agglutination with the Aid of the Centrifuge. The Influence of Temperature on Absorption and Flocculation.** *The Journal of Experimental Medicine*, January, 1922, xxxv, No. 1, p. 63.

The nature of specific agglutination of bacteria is considered to occur in two phases; a reaction between cells and serum, in which



the antigen and the specific antibodies combine, and a secondary reaction among the affected bacteria in which they cohere and flocculate out in suspension. A number of factors affect the phenomenon; thus temperature, agitation, mass action, and the influence of electrolytes are common factors.

The flocculation of bacteria in the presence of their specific antisera may be mechanically affected by means of the centrifuge. The affected organisms, brought into contact by centrifugation, tend to adhere in clumps identical with those produced by the unaided process of agglutination.

By the elimination of the inconstant time factor in the flocculation phase opportunity is given for a closer analysis of specific absorption, and of the influence of various conditions upon both phases of agglutination.

Observations on the time and temperature relationship of the flocculation phase shows that even at high temperatures flocculation does not become visible until long after absorption has progressed to the point required for complete agglutination, while at low temperatures, in high dilutions of the antiserum, flocculation may not appear at all, even though absorption has advanced appreciably. In order to produce a visible result, spontaneous flocculation requires an absorption reaction several times in excess of that required by the centrifuge method of agglutination.

H. M. FEINBLATT.

BLOOR, W. R.: **Fat Transport in the Animal Body.** *Physiological Review*, January, 1922, ii, 92-115.

The essential constituents of the proteins and carbohydrates—the amino-acids and the monosaccharids—are soluble in water, while those of the fats—the higher fatty acids—are not. The amino-acids and monosaccharids are, according to the most recent knowledge, carried as such in the blood, while the split products of the fats are built up again into fat for transport. In common with all the other food substances the fats are hydrolyzed in the gastro-intestinal canal, the products of the hydrolysis being fatty acids and glycerol. The experimental data regarding the form in which fat passes out of the intestine may be considered under four headings: first, that bearing

on the degree of hydrolysis of fat in the intestine; second, that regarding the absorbability of the split products; third, the behavior of the intestine toward substances of a fatty nature which are not fat; and fourth, evidence regarding the absorption of unchanged fat.

*Summary.*—Abundant facilities are provided for the hydrolysis of those esters of the fatty acids which hydrolyze with the same or greater ease than the fats. The split products are readily absorbed and converted into fat in the passage through the intestinal wall. Substances which cannot be hydrolyzed and so rendered water-soluble are not absorbed no matter in what form they may be presented. The prevailing belief that fats are completely hydrolyzed in the intestine and absorbed as the hydrolysis products thus has most of the evidence in its favor, although the possibility of the absorption of some unchanged fat cannot be absolutely excluded. The reason for the hydrolysis, which appears to be universal for all food substances, is not far to seek. On the one hand there is the necessity for the exclusion of substances which as presented would be useless and harmful to the organism, such as unchanged proteins, complex carbohydrates or fat-like substances other than fat, and on the other, since no food substance is presented in immediately usable form, more or less complete hydrolysis must take place in any case, if not in the intestine then in the tissues. The two purposes are combined in the intestine, which by means of the same process rejects harmful or useless substances and reduces the useful material to fragments which can be used at once by the tissue cells which require them. There is therefore no need to assume a special mechanism for the transfer of fat from the intestinal lumen into the epithelial cells; this takes place according to the usual rule by hydrolysis which is usually complete to the limits of hydrolysis for the individual substance, followed by absorption of the split products in water solution. The fat fragments after reaching the interior of the epithelial cell appear to be built up into fat again and retained in the cells for some time—at least this is the picture when much fat is being absorbed. Considering all the evidence together, there is every reason to believe that the fat is completely hydrolyzed into glycerol and fatty acids before it passes from the intestine. The larger and only traceable part of the fat is delivered into the blood stream from the thoracic duct in the form of suspended particles of finely divided pure fat. Lipoid material exists in the tissues in several forms, of



which fat, phospholipoid (lecithin, etc.), cholesterol and cholesterol esters are present in largest amounts and are best known. The main form in which lipid material is stored in the organism is however as fat and although there are but few locations in the organism where traces of fat may not be found it is in general laid away in a special tissue—the adipose tissue—which is collected characteristically in definite locations. Fat is laid down in the cells of the adipose tissue of animals in the same way as has been noted for the epithelial cells of the intestine—appearing first as fine droplets which gradually becoming larger, fuse with each other until the cell is filled with a single large globule of fat. In the laying down of fat in the adipose tissue the cells adjacent to the blood-vessels are filled first and the filling extends outwards in all directions, which also has been found to be the case with the liver. As to what elements or constituents of the cells are concerned with the laying down of fat, very little is known. When the stored fat is required by the organism it is removed from the adipose tissue first and the removal continues until these cells are practically empty, while even in death by starvation the fat content of other tissues may not be greatly changed, indicating that the supply of fat in these cells if used at all is being continuously replenished from the blood. The output of fat from the tissues into the blood may or may not cause an increase in the blood lipoids, depending upon the balance between the inflow from the stores and the outflow to the tissues in which fat is being utilized. That there is a tendency toward constant values for the lipoids of the blood both in plasma and especially in the corpuscles in the normal animal seems now to be pretty well established, and whenever the amount of fat shifted is not too great the blood preserves its constancy of values. It is significant that the increases in blood lipoids in fasting take place only in the first days, and after that the lipid content remains constant or slowly diminishes till the death of the animal. Similarly those substances which cause a transfer of fat from the fat stores via the blood such as narcotics, phosphorus, etc., may or may not cause an increase of blood lipoids, probably for the same reasons. Great hemorrhage in certain animals (rabbits) produces an outflow of fat into the blood far greater than the normal mechanism can take care of, and the result is a lipemia. In all cases examined of lipemia lasting for more than a day or two, not only the fat but also lecithin and cholesterol are much above normal.

BEELER, C., AND FITZ, R.: **Observations on Glycemia, Glycuresis, and Water Excretion in Obesity.** *Archives of Internal Medicine*, December 15, 1921, xxviii, No. 6, p. 804.

This report is based upon the observance of the results of an alimentary glucose tolerance test in a series of non-diabetic obese patients to determine how many had an abnormally low tolerance, classifying them as being prediabetic.

The women, as well as the men who took this test, were at least 10 per cent over normal in weight for their respective ages, and the observations were controlled by similar tests on ten non-diabetic patients of normal weight, and on eleven mild diabetic patients. The dosage of glucose was not graduated upon the basis of body weight in the obese, as the large dose caused nausea and vomiting. Therefore the obese and diabetic patients received not more than 50 grams of glucose, while the normal non-diabetic patients received 0.66 grams for each pound of body weight.

The tests were carried out and reported very fully. The following are the conclusions arrived at in the tests.

Obese patients show characteristic changes in both sugar and water metabolism. A certain few show a fairly normal curve of glycemia on the ingestion of 100 grams of glucose; they tend to excrete small quantities both of urine and sugar impermeable kidneys, but rather a sugar and water disturbance perhaps related to endocrinopathy. They may burn or store sugar with unusual rapidity; this may be a factor in the development of adiposity. They do not develop diabetes later, and should be treated for obesity and endocrine disease.

Another group of obese patients have a curve of glycemia following the ingestion of 100 grams of glucose which resembles that of mild diabetes. These also excrete amounts of glucose in their urine over a measured interval of time, and excrete normal amounts of urine or may have a slight diuresis. This type of case represents early diabetes and should be treated accordingly.

The fasting blood sugar estimation or the glycemia curve by itself is of little significance, and is of less importance than the determination of glycuresis.

The sugar tolerance test in obese patients with blood sugar curve and quantitative measurement of fluid and sugar output gives valuable diagnostic and therapeutic information.



MISHULOW, L.: Studies on Acute Respiratory Infections. IX. Differences in the Character of the Hemolytic Action of Streptococci and the Relative Value of Various Methods in Demonstrating These Differences. *The Journal of Immunology*, September, 1921, vi, No. 5, p. 329.

The author found that the blood agar plate incubated for 48 hours is a more reliable method of determining the hemolytic action of streptococci. The hemolytic action of the *beta* type is due to an hemolysin which is a soluble extracellular product. The hemolytic action of the *alpha* type is due to direct action of the cocci or to products liberated by autolysis.

W. LINTZ.

ALESSANDRI, C.: Brief Research of the Variation of the Cell-content of Cholesterin in Pathological Conditions (Brevi ricerche sulla colesterinemia nell'uomo in svariate condizioni morbos). *La Riforma Medica*, 1921, xxxvii, 1095.

The super-renal cortex has a cell-content of cholesterin, and this content, in certain pathological conditions, varies, and differs from that of the blood. This shows that the suprarenals have a relation to the cholesterin circulation. This has been shown in animal experiment by Chauffard, Hueck, Rothschild, Signorelli, etc. According to Wettmann, Krylow, and Landau the part played by the suprarenals on the cholesterin circulation is caused by a chemical change of the liquids through cellular activity. The cholesterin esters of the sera and the cholesterin which circulates freely in the organ change their metabolistic weight.

The normal cholesterin contents amount to from 1.50 per mille to 1.80 per mille. This amount is changed in certain diseases, being above normal in nephritis, hepatic diseases, arterial sclerosis and diabetes, and below normal in infectious diseases and anemia. A slight disturbance of the cholesterin equilibrium occurs in certain hepatic conditions, pulmonary tuberculosis, venereal diseases, Basedow's disease, cachexia, etc.

The author made experiments by injecting 1 c. c. adrenalin solution, intravenously or subcutaneously, and after half an hour ob-

served the cholesterin content of the blood-serum. He took notes on the arterial pressure, the pulse, vasomotor, cardiac, arhythmic and pupillar phenomena. Furthermore, noticed diuresis, glycosuria, etc. Grigaut's chlorometric method was employed.

His results are given in the following table:

TABLE NO. I.					
NO.	AGE	CHOLESTERINEMIA		DIFFER- ENCE	OBSERVATIONS
		Before	After		
1	35	2.04	2.32	0.28	Exudative pleuritis
2	61	2.64	2.70	0.06	Diabetes mellitus
3	29	2.70	2.70		Neurasthenia
4	24	2.79	2.58	0.21	Sciatica
5	61	1.56	1.92	0.36	Chronic articular rheumatism after infection. Arteriosclerosis

TABLE NO. II.					
6	62	2.47	3.15	0.68	Chronic articular rheumatism. Arteriosclerosis.
7	34	1.65	2.02	0.37	Exudative pleuritis
8	50	2.67	2.77	0.10	Diabetes mellitus
9	57	3.35	3.88	0.48	Chronic enterocolitis with arteriosclerosis. Glycosuria 1 per cent two hours after injection.
10	30	1.92	2.10	0.18	Chronic articular rheumatism deformans

The first table contains the data from intravenous, the second from subcutaneous injections.

OTTENBERG, R.: **Hereditary Blood Qualities.** *The Journal of Immunology*, September, 1921, vi, No. 5, p. 363.

The number of instances in which the group blood test is of value is limited, but within these limits its evidence is conclusive. The



author has made groupings of parents and from many experiments and groupings has concluded that from certain groups of parents only certain groups of offspring may result. Therefore by testing for groups of parents and of offspring he can determine whether an offspring is legitimate or not. Until all parties interested can be forced by law to undergo this test there will always be a means of escaping absolute proof of legitimacy of offspring.

W. LINTZ.

HOOKE, S. B., AND ANDERSON, L. M.: **The Specific Antigenic Properties of the Four Groups of Human Erythrocytes.** *The Journal of Immunology*, November, 1921, vi, No. 6, p. 419.

*Summary.*—Normal rabbit sera possess weak agglutinins for the four groups of human erythrocytes. In certain rabbits this agglutinative capacity is group-specific, being particularly marked for Group II and IV cells. Each of the four types of human sera contains agglutinins for rabbit erythrocytes. No group-specificity is manifested. Group-specific hemagglutinins, demonstrable by appropriate adsorption, were produced by injection of rabbits with type cells. The specific isoagglutinative activity of any type of human serum can thus be duplicated. Group-specific hemolysins or alexin-binding antibodies are developed with the agglutinins.

W. LINTZ.

ZINSSER, H.: **On the Essential Identity of the Antibodies.** *The Journal of Immunology*, September, 1921, vi, No. 5, p. 289.

The author does not believe that there is a variety of antibodies which can be produced such as agglutinins, precipitins, opsonins, etc. His "unitarian" view concerning antibodies is that antibodies are all of one type and that where the antibody and the antigen unite the resultant reaction which may be observed is determined not by the differences in the nature of the antibodies but by the physical state of the antigen itself, the nature of the co-operative substances such as alexin and leucocytes, and the environmental conditions under which the observation is made. Accordingly, depending upon

these factors, the result observed may be precipitation, agglutination, hemolysis, or anaphylactic sensitization. The author goes on to discuss the various objections to his unitarian view of antibodies and apparently overcomes them and then proceeds to discuss the points in favor of his view. He concludes that although he does not want to convey the impression that the unitarian view is absolutely and rigidly proved, still a denial of such a view necessitates the assumption that the injection of pure antigen calls forth from five to six fundamentally different reactions on the part of tissue cells. Such a thing would be justified only on the basis of incontrovertible proof.

W. LINTZ.

WRIGHT, S.: **The Effect of B-Vitamin on The Appetite.** *Lancet*, December 10, 1921, ii, 1208.

"Young rats fed on diets deficient in vitamin B lose weight after varying periods of time and finally die in a condition of emaciation. It was thought interesting to determine whether diminished food intake was a contributory factor in this loss of weight. Young rats from the same litter were employed. All the animals were fed for the first two weeks on a basal ration containing vitamin A and B in the form of cod-liver oil and marmite respectively. The basal ration was the one usually employed by workers in this field and contained purified caseinogen, starch, and a salt mixture. As a source of fat containing no vitamin A a specially prepared form of palm-kernel oil was used. It consisted of an edible quality of palm-kernel oil which had been heated for four hours at 160° C. (280° F.), and subsequently treated with superheated steam at 230° C. (446° F.). Experiments (unpublished) have been carried out with this substance, which show that palm-kernel oil, after such treatment, is quite free from the fat-soluble A vitamin.

*Method of Experiment.*—"The rats were kept in metabolism cages in a warm room. The food—placed in beakers which were firmly fixed in the cage so that no spilling could occur—was presented twice a day, in the morning and evening, and on each occasion was allowed to remain in for a period of one hour. The average daily intake of each animal on such a diet was thus determined. After two weeks both vitamins were removed from the diet of certain



of the rats. The others were kept on the diet rich in vitamins, and served as normal controls. At once, within twenty-four hours, the animals receiving the vitamin-free diet showed a considerable fall in their food intake. The level of intake remains low throughout the period that this diet was maintained. At the same time there was also a steady decline in the weights of the animals. Thus, one of the rats which had been consuming on an average of 9.37 grams daily now only took 5.64 grams; during this period, too, its weight fell from 55 grams to 43 grams. The control animal fed on a diet rich in vitamins maintained a daily intake of 14.20 grams and its weight rose from 72 grams to 110 grams.

"A trace of marmite was now added to the diet of the vitamin-free animals. It was administered separately in the mornings about two hours before the first feed. The marmite was eagerly consumed by the animals. The intake of the basal ration at once rose and at the same time the weights began to improve. The improvement in intake was as rapid in onset as the fall had been after the removal of the vitamins. In the case of the above-mentioned animal the intake rose from 5.73 grams to 8.66 grams daily. The weight rose from 43 grams to 59 grams in a period of three weeks. It should be noted that the intake never reached the level attained during the period when both vitamins were administered.

*Previous Experiments Summarised.*—"The literature on the subject is not very extensive. Drummond (*Bioch. Jour.*, 1918, xii, 25) has investigated the protein metabolism in rats fed on diets containing no vitamin B. He was unable to detect any abnormality sufficient to account for the inability to maintain weight. During the course of these experiments he noted that the food-consumption of the rats fed on the diet deficient in vitamin B was reduced. Increased consumption could be brought about by the addition of flavouring agents to the diet. The same effect was produced by the addition of water-soluble vitamin B. Only when the vitamin was added, however, was there any resumption of growth. Drummond (*Ibid.*, 1919, xiii, 94) has also shown that there is no disturbance of fat absorption in the absence of the fat-soluble vitamin A from the diet.

"Karr (*Jour. Biol. Chem.*, 1920, xlv, 255) carried out experiments on dogs, in which weighed quantity of food deficient in water-soluble vitamin B was presented to the animals. At first the portion was completely consumed. Subsequently most of the animals

refused to take a part, and ultimately failed to eat any. The desire to eat could be restored on addition of vitamin B. The same result was obtained if the vitamin was presented apart from the food. In the case of one animal, although the intake remained normal, the usual symptoms produced by the vitamin deficiency made their appearance.

"Cowgill (*Proc. Soc. Exp. Biol. and Med.*, xviii, No. 8, 290) utilized these results as a test for the presence of vitamin B in natural food-stuffs. He found that the potency in promoting appetite ran parallel to the potency in relieving symptoms in polyneuritic animals.

"Lumiere (*Presse Méd.*, May 8, 1920, No. 20; also *Bull. de l'acad. Méd.*, March, 1920) fed pigeons with decorticated rice and noticed a marked diminution of intake. There was evidence of stasis in the upper part of the digestive tract. The rice was seen to lie as a compact mass in the stomach. Trituration was defective, and the onward passage of the bolus through the pylorus was greatly delayed. There appeared to be a condition of deficient glandular secretion and hypotonus of the intestinal wall. A small dose of extract of rice polishings provoked abundant glandular secretion and stronger intestinal movements which resulted in rapid evacuation of the masses of polished rice lying in the upper intestine. He found that these animals die sooner than starving animals, and quotes Forster, who obtained similar results in dogs.

"There appears, therefore, to be a considerable accumulation of evidence that the appetite is adversely affected by the absence of vitamin B from the diet of animals. It is insufficient, however, to state that the vitamin acts by diminishing appetite. Appetite is a general conception, the physical expression of which is the food intake. The problem still remains to explain why the intake is lowered when the vitamin is withheld. It is a general experience on post-mortem examination of rats fed on diets deficient in vitamins A and B to find the stomach full of food and active fermentation in progress. Sometimes the stomach is definitely dilated. The finding suggests that there is some defect in the power of the stomach to deal with its contents and propel them farther down the intestinal canal. Lumiere, too, found the food lying as an inert mass in the stomach of the pigeons experimented on. From a study of the work detailed, it is suggested that the diminished intake may be accounted for quite simply in the following way. The contractions of the



stomach wall are weak, the secretion of the gastric glands is defective, and as a result the stomach is never empty. It is always partly distended with fermenting material. Hunger contractions do not take place, the craving for food becomes low, and the intake falls off considerably. This theory, that the defect lies in the stomach, receives valuable support from the fact that the animal responds so very rapidly to the re-addition of the vitamin to the diet. In rats the rise in intake is marked at the end of twenty-four hours. In pigeons, rapid evacuation of the contents of the intestinal canal occurred immediately after administration of the vitamin. Admitting the fact of lowered food intake, it must be borne in mind, however, that the loss of weight shown by the animals, and their ultimate death, can still only be partially accounted for. In Drummond's experiments, improved intake was obtained by adding flavouring agents to the diet; growth, however, only occurred when the vitamin was added. In one of Karr's dogs, though the intake remained high in the absence of the vitamin, general symptoms of the vitamin deficiency developed. Forster's experience, that dogs succumbed more rapidly on a vitamin-free diet than when completely deprived of all food, is also very significant.

"It may be concluded with some degree of assurance that vitamin B produces its effects by acting primarily, if not solely, on the intestinal canal. In its absence muscle-tone is diminished, peristaltic movements are weak, and there is a reduction in the amount of digestive juice secreted. As a result, stasis occurs, the appetite flags, and the food intake falls off considerably. It is almost certain, however, that the animal is still consuming sufficient to enable it to survive for considerably longer periods than it actually does. The explanation for the early decline may perhaps be found in the changes which occur to the food which is retained for an abnormally long time in the intestine. Fermentation soon sets in and toxic bodies may be produced which adversely affect the general health of the animal, death resulting from the combined effects of all the factors mentioned.

*Conclusion.*—"Vitamin B acts by facilitating the efficient carrying out of the functions of the intestinal canal. The main effects produced by the absence of the vitamin, *i. e.*, diminished food consumption, loss of weight, and ultimate death, are due to intestinal stasis and the absorption of toxic bodies which results therefrom."

CLOCK, R. O., AND BEARD, S. D.: **A Method of Preserving the Antigenic Properties of Gonococcal Proteins in Glycerol.** *New York Medical Journal*, November 2, 1921, cxiv, No. 9, p. 499.

Laboratory investigations have shown that saline bacterial vaccines undergo rapid autolysis with disintegration of the bacterial proteins and loss of specific antigenic properties. The products of autolysis are toxic and cause severe reactions. Saline vaccines do not represent the full immunizing properties of the bacteria. The gonococcus, even in living cultures, shows evidence of rapid destruction by autolysis. Gonococcus saline vaccines have not yielded uniformly satisfactory results, probably because they contain a considerable amount of nonspecific products of autolysis and too small and variable an amount of unaltered gonococcal proteins. The gonococcus glycerol vaccine is free from autolytic products. Glycerol, being hygroscopic, prevents hydrolytic autolysis of the bacterial proteins, and the antigenic power is thus preserved. Gonococcus glycerol vaccine possesses many times more immunizing power than a corresponding saline vaccine, because the glycerol vaccine contains the bacterial proteins in a relatively unaltered and stable form. Glycerol completely preserves the antigenic properties of the bacterial proteins for at least one year. The glycerol vaccine is not heated, thereby eliminating the possibility of protein changes due to partial heat coagulation. It is prepared in concentrated form so that the bacterial protein is kept under the preservative action of glycerol until immediately before its administration, when it is diluted with physiological salt solution. The dosage established begins with one hundred million and progressively increases by that amount at each subsequent dose up to one thousand five hundred million. - For refractory cases, the dosage may be continued up to two thousand million. The types of cases in which this vaccine has been used in clinical trials with encouraging results are the acute complications of gonorrheal infection, including arthritis, epididymitis, vesiculitis and prostatitis. The method used in the preparation of the gonococcus glycerol vaccine eliminates largely, if not entirely, the disadvantages of the saline suspended bacterial vaccines which seem to be (a) rapid autolysis of the bacteria, (b) deterioration and loss of antigenic power, (c) toxic reactions, and (d) lack of uniform clinical results.



Coca, A. F., and Baughman, W. H.: **The Reaction of the Rat to Diphtheria Toxin.** *The Journal of Immunology*, November, 1921, vi, No. 6, p. 387.

It has been thought that since a rat can survive the injection of a thousand times the minimum lethal dose of diphtheria toxin (for the guinea pig), it must be absolutely immune to the toxin. Under this impression experiments were performed to see whether or not the rat is capable of antitoxin production, as antitoxin production has not been demonstrated in animals who are absolutely immune to the respective toxin. As a result of the experiments the authors came to the following conclusions:

(1) The rat is not absolutely immune to diphtheria toxin, although it actually survives the injection of 1000 minimum lethal doses (for the guinea pig), it regularly succumbs to 4000 such units.

(2) The rat is capable of the production of antitoxin upon repeated injection of diphtheria toxin.

(3) The resistance of the rat to diphtheria toxin is not due to the presence of normal antitoxin, but to the property of the cells of preventing the toxin from entering them or of attaching itself to them.

W. LINTZ.

Wadsworth, A. B., and Hoppe, E. N.: **The Action of Bacterial Culture Products on Phagocytosis.** *The Journal of Immunology*, November, 1921, vi, No. 6, p. 399.

Experiments were undertaken not only for the purpose of investigating the action of the known bacterial poisons on the body cells, but also in the hope of finding some isolated animal cells or tissues sensitive to the unidentified bacterial substances, and a technique delicate enough to register degrees of injury to their normal reactions. They found:

(1) The action of culture broths of 13 widely differing pathogenic and asprophytic bacterial species was tested on phagocytes in vitro. In every case the phagocytic power of the leucocytes was inhibited in a high degree.

(2) Tests, chiefly with a standard diphtheria toxin, was done to

determine some facts concerning the nature of this substance depressing to phagocytic activity and its relation to the true toxins. These tests showed that its action was immediate, and could not be neutralized by the ordinary antiserums tested, nor destroyed by exposure to the degrees of heat or light used in the experiments.

Variations in the constitution of the culture broths, which greatly affected true toxin production caused no variation in the production of the depressing substance. The depressing action of young culture broths was found to be less marked than that of older cultures. It was also found that digestion with proteolytic enzymes either wholly or partially destroyed the depressing elements. The substance could be isolated by absorbing it to leucocytes and then washing it from them with salt solution. After removal of the substance the leucocytes regained their phagocytic activity.

W. LINTZ.

VALENTINE, E., AND MISHULOW, L.: **Studies on Acute Respiratory Infections. VIII. A Study of the Cultural and Serological Relationship of Hemolytic Streptococci Isolated from Inflammatory Conditions of the Respiratory Tract.** *The Journal of Immunology*, September, 1921, vi, No. 5, p. 301.

The authors have undertaken studies of acute respiratory infections with special attention to the cultural and serological relationships of the hemolytic streptococci isolated from the respiratory tract during these infections. Their purpose was to determine whether or not a dominant variety of hemolytic streptococcus could be isolated from the cases of acute colds and influenza studied. It had been shown previously that the hemolytic streptococci are frequently present in the throat especially where tonsils are enlarged. In the attempt to find a dominant strain of streptococcus hemolyticus in the series of cases, the authors undertook to study first the biological characteristics in order to determine what groups were separable by fermentative and hemolytic reactions. The members of these groups were then studied immunologically by agglutination and where strains were seemingly alike agglutinin absorption was employed as the final criterion of identity or non-identity.

The cultures studied were obtained from the nose, naso-pharynx



or throat in acute colds, rhinitis, and pharyngitis and from the more severe influenzal conditions. A few pleurisy and mastoid cases are included as well as normal controls.

The authors found that the streptococci of the hemolytic group obtained in these studies show that the strains fall into many cultural groups and sub-groups. A serological study showed so few similarities that the probability of a dominant strain seemed remote. There was no correlation between the grouping and the type of the disease. These observations and the relative infrequency of streptococci of the hemolytic group in these studies seem to justify the conclusion that none of the strains isolated were of primary etiological importance.

W. LINTZ.

ECKER, E., AND ROGOFF, J. M.: **Complementing Activity of the Blood Serum with Relation to Adrenal Deficiency.** *The Journal of Immunology*, September, 1921, vi, No. 5, p. 355.

In this study of the direct or indirect relation of the endocrine organs to immune reactions, the author used rabbits as the experimental animals because they generally survive a complete bilateral adrenalectomy, probably because of accessory adrenal tissue being present. These accessory adrenals were found to consist only of cortical substance, while chemical and microscopic examination failed to reveal any chromoffin material.

Five rabbits were adrenalectomized—in one both adrenals were removed at once—in four others they were removed at intervals of 12 days; one other was used as control, a decapsulation of the kidney being done. The animals were bled at intervals of from 2 to 3 days and blood titration was made. The cell suspension used was 5 per cent sheep blood and the antisheep rabbit serum in doses of 3 units.

The complement titers of these animals clearly showed comparatively small variations and indicated that the absence of the adrenal glands has no demonstrable influence on the complement activity, the same variations occurring in control animals. In one animal in which no accessory adrenal gland was found at the time of operation, a large one was found some time later in another experiment, a considerable hypertrophy of an accessory gland having taken place.

W. LINTZ.

## SECTION ON PEDIATRICS

POWERS, H. **Postdiphtheritic Disseminated Myelitis, with Report of a Case.** *Boston Medical and Surgical Journal*, January 12, 1922, clxxxvi, 45.

The author gives a review of the few reported cases of disseminated myelitis or sclerosis following diphtheria. The terms disseminated myelitis and multiple sclerosis are used by some authors interchangeably. Oppenheim applies the former term to "those cases in which all of the lesions have developed acutely", and the latter to those in which the condition has been of gradual development, but it seems better to regard disseminated myelitis as an acute or chronic condition that may or may not terminate in disseminated sclerosis, and to assume that all conditions of disseminated sclerosis are the result of disseminated myelitis, either acute or chronic. This is a simple rule for the use of the two terms, the former being the more inclusive. The outcome of the case rather than its mode of onset would determine whether it be called myelitis or sclerosis, for myelitis may terminate either in recovery or in sclerosis.

In 1883, Pierre Marie said that Charcot had told him that in Germany the connection between *sclerose en plaques* and infectious diseases had attracted the attention of physicians, and refers to work of Kahler and Pick, 1879, who assigned for the cause the action on the nervous centers of inferior organisms, and cites 11 cases following typhoid fever, 3 following pneumonia, 2 after erysipelas, and 1 after dysentery, 1 following chorea, and 1 case following diphtheria. The last was reported by Stadthagen, in 1883, but Marie implied some scepticism when he says: "The author considers this affection as one of *sclerose en plaques*. We have been unable to consult the observation *in extenso* and are obliged to content ourselves with the analysis of the *Centralblatt*. (This was the same year of discovery of



Klebs-Loeffler). An eleven-year-old boy had diphtheria at age of four, with paralysis of palate and polyneuritis. He dragged right foot, and later right arm became weak, still later bulbar symptoms developed and there were choreiform movements and intention tremor, and spastic gait. Nystagmus and diplopia were absent, which probably made the case unconvincing to Marie.

Several cases were reviewed by Bernhardt (*Centralblatt. f. med. Weissenschaften*, 1883, p. 90). Pathological findings in this condition were first reported by Prof. Henschen of Sweden, in a girl aged 14, who had all clinical signs of diphtheria during an epidemic (culture of throat not made). Week after onset tingling sensations and other paresthesias in the lower extremities appeared; two days later, could not walk without support. Patellar reflexes at first increased and afterward lost; ankle jerks, plantar and abdominal reflexes abolished; atrophy of muscles, including sternocleidomastoids and trapezii; accommodation was lost; visual fields contracted in upper half, and hyperesthesia in lower half of visual fields; pupils reacted slowly to light; slight bilateral ptosis; urine retained and bowels paralyzed. Anesthesia everywhere below level of nipples; thermal sense lost in lower extremities, also position sense and muscle sense; no response to faradism in lower extremities and diminished response in the arms. The psyche was intact. After two weeks, motility began to return, and in six weeks from onset, motility of right upper extremity good and lower extremities improving; sensation also improving but bladder and rectum remained paralyzed; ten weeks after onset patient contracted bronchopneumonia and died. Pathological findings, spinal cord, dura normal, pia normal; surface of cord, macroscopically normal; microscopically, areas of disseminated myelitis and of sclerosis; myelin sheaths often destroyed and axis cylinders to a less extent; proliferation of neuroglia cells; destruction of anterior horn cells, grey substance elsewhere being unchanged; thickening of vessel walls; no hemorrhages mentioned; dorsal and lumbar regions much changed and cervical only slightly; roots and peripheral nerves degenerated. Klebs-Loeffler not found in tissue. Diagnosis acute disseminated sclerosis, with neuritis. "Such anatomical findings after diphtheria seem not hitherto to have been made."

Redlich, in 1906, reported a case, and concludes that heredity, congenital defect and psychic trauma are of little or no importance,

and that acute infections are the usual cause, mentioning cases following typhus, variola, pneumonia, erysipelas, diphtheria, measles, scarlet fever, dysentery, cholera, influenza, angina, rheumatism, and one case of Spiller's in which estivo-autumnal malaria was the apparent cause. Then he refers to a postdiphtheritic case previously reported, which first presented a typical polyneuritis, and in the course of a year, the picture of multiple sclerosis.

Including the following case reported by the writer, in all 8 cases have been recorded in literature. A boy aged ten, was brought to hospital, in January, 1921, unable to walk without assistance. (Had a sore throat one month previous, and physician gave, 1,000 units antitoxin, although diphtheria diagnosis had not been made, but as a precaution). Speech was indistinct; no headache and not lethargic; could not sleep well; fluids escaped from nose when drinking some time previous, but had recovered from this symptom; sphincters had not been paralyzed. Examination, development corresponds to age; heart systolic murmur, transmitted to axilla; rate, 88; rhythm regular; tonsils, diseased; fundi normal; pupils equal, regular in outline and react normally to light and in accommodation; nystagmus, lateral, with quick phase to the right, on looking to either side; no diplopia; slight double ptosis; ataxia present; large error in finger-to-nose test; Romberg positive; gait ataxic, with feet far apart; some incoördination of upper extremities; slight intention tremor; adiadokokinesia; knee jerks and ankle jerks absent; no lateral curvature of the spine; keeps head flexed; tactile sense normal; vibratory sense normal; mental state, good; culture from throat does not contain diphtheria organism. Diagnosis, disseminated myelitis and polyneuritis. In thirteen days general condition and gait improved; nystagmus and ataxia still present; accommodation weak; speech still very indistinct; cannot walk without assistance; gradual improvement of symptoms until October when only a suggestion of nystagmus was present.

Henschen mentions early experimental work done by Enriquez and Hallion, who injected diphtheria toxin into dogs, and produced hemorrhagic lesions of nerve roots and in the white substance of the cord. In 1895, J. Crocq, Jr., produced disseminated sclerosis in dogs in two ways, by inoculating them with diphtheria bacilli, and by injecting the toxin alone. In more recent years a number of workers have produced disseminated myelitis in animals by the injections of



cerebrospinal fluid and blood from human cases intraventricularly, intraperitoneally and subcutaneously, and in some of the animals a spirochete, differing from the spirochete of syphilis, has been found.

Of the cases reported, the author's case was the only one in which antitoxin was given. The picture of disseminated myelitis was complete, but apparently the myelitis had not terminated in sclerosis. As the early work of J. Crocq, Jr., demonstrated that toxins alone, without the presence of the living organisms, were capable of producing myelitis, it would seem possible to arrest the progress of a case by using the appropriate antitoxin; and from Crocq's work we may infer that attempts to produce an active immunity by the introduction of toxins are contraindicated.

The following points are emphasized: While not infrequently a polyneuritis will produce motor disturbances resembling the ataxia produced by lesions of the cord of the cerebellum, these latter conditions are known to occur in diphtheria. The author believes it is possible for an experienced observer to distinguish between those disturbances of motor function resulting from the muscular weakness of peripheral neuritis and a true ataxia. Nystagmus of the type observed in this case cannot be accounted for by peripheral neuritis. That there has been complete functional recovery is not evidence that myelitis did not exist.

**HARKNESS, G. F.: Late Development of the Fusion Sense—Case Report.** *Journal of Iowa State Medical Association*, September, 1921, ii, No. 9, p. 357.

The following case is of interest in that it converts the statements made by Worth that where the fusion sense is not present, one can not expect to develop it after the age of six. In conducting examinations for the aviation section of the signal corps the first twelve subdivisions had to do with examinations of the eyes. A young man presented himself for the aviation section; he denied any previous eye trouble, had 20/20 vision with either eye, pupillary reactions normal, successfully passed the stereoscopic visual test and with normal visual fields and color perception.

No nystagmus was elicited, but while covering and uncovering each eye a slight movement inward was detected, of the same degree in either eye when it was uncovered.

Applicant then gave the following history: he had suffered from an alternating divergent squint. Condition continued until the age of 17 years; he suffered keenly from the cosmetic defect and conceived the idea that he might be able to so exercise his internal recti muscle and overcome the difficulty. He stated that he systematically began simple convergence exercises and in about one month's time he was able to overcome his diplopia when his eyes approached parallel axes, and that this was the hardest part of his task. He continued until he was able to maintain single binocular vision for both distant and near objects with comfort.

The passing of the stereoscopic test, the author believes, proved the development of the fusion sense at the age of seventeen.

CALVIN, J. K.: **Goat's Milk.** *Archives of Pediatrics*, September, 1921, xxxviii, 584.

Goat's milk is very popular in certain European countries. It is preferred to cow's milk in Italy. Spargo (*Common Sense of the Milk Question*, 1908) states that all things considered, the neglect of the goat as the provider food for infants is very much to be deplored. Goat's milk is pure white without specially pronounced odor or taste, if properly produced and handled.

#### COMPOSITION OF GOAT'S MILK

Water .....	36.88
Casein .....	2.87
Albumen .....	0.89
Total Protein .....	3.76
Fat .....	4.07
Sugar .....	4.64
Ash .....	0.85
Total Solids .....	13.12

"There is no essential chemical difference between the constitution of goat's milk casein and that of cow's milk". It may be modified in the same way as bovine milk for infant feeding. The cream cannot be separated by centrifuging; it may be thoroughly separated in a cream separator. "A considerable number of cases in which goat's milk has proven especially valuable for infants and invalids are on record." Extensive study of the use of goat's milk in in-



fant feeding by Doctors Sherman and Lohnes, showed that the curds of goat's milk when returned from the stomach were smaller and more flocculent than those of cow's milk. And the younger the child the more the evidence pointed toward a greater gain on goat's milk. Seventeen cases out of 18 that were not thriving on any other food were brought to a satisfactory state of nutrition through the use of goat's milk.

"Babies can take the milk directly from the udder. It is customary in many parts of France and Switzerland to carefully wash the udder and teats and permit the infant to suckle directly which certainly insures fresh, clean milk. The goat is a very clean animal and the dry condition of the normal stool makes it easily possible to keep the udder clean. Because of the solid feces there is much less danger of contamination of the milk. Goats acquire enteritis much less frequently than cows.

"Another advantage of goat's milk is that it cannot be skimmed as the cream does not form a distinct layer. Consequently, dishonest dealing along this line is obviated.

"Goats are practically immune to tuberculosis. Only from 0.4 to 0.6 per cent of the goats in Prussia gave a positive reaction for tuberculosis. The question of the transmission of a passive immunity to tuberculosis by the transfer of natural antibodies from goat's milk to very young infants or from the use of this milk over a much longer period is a subject of investigation, at present incomplete.

"From the foregoing facts, it is evident that goat's milk deserves more consideration than it is at present receiving in this country. Under certain circumstances it appears to be a valuable artificial food for infants. More experimental work to determine its exact status in the feeding of normal and sick infants should be carried out, so as to place it on a sound scientific basis. The milk-goat industry is only in its infancy in America. The wide-spread use of goat's milk will sooner or later be a fact in this country because of the milk's many practical advantages in special instances."

**GRAHAM, E. E.: Feeding During the First Two Years.** *Pennsylvania Medical Journal*, 1921, xxiv, No. 8. p. 555.

If the mother has a sufficient supply of breast milk, nothing else should be given during the first nine months. Then give one bottle

each day, properly prepared modified milk. Increase number of bottles and strength of modified milk gradually, until a baby of one year is taking whole milk. If a bottle baby, it should be taking some form of barley water to provide starch, and if breast fed, should be given a cereal diluent with its bottle of cow's milk. During the last two or three months of the first year it should be given a well-cooked cereal once a day, and a small amount of sugar as well as milk on the cereal. "Orange juice is practically always given". With a normal baby, this gives us the proper development for the first year. The baby one year old may also have apple sauce, baked apple, or prune juice with a mashed prune pulp added. A well-baked potato may be added to the diet when the baby is a year and one-half old; and a month or two later a portion of a soft boiled or coddled egg may be added, and if it agrees the whole egg may be later given. Zwieback, toast, or 24-hour old bread should be given during the latter part of the first year with one or more of the feedings, always with the feeding and never between feedings.

Cereals should be given when the baby is one year old. Farina and cream of wheat are two of the best. They must be well-cooked and given with milk and a little sugar.

"The increase in the diet of a baby depends upon its ability to digest the food it is already receiving, and to a certain extent, upon the time of year. During the winter months, or during the summer months, if the baby happens to be in a cool climate and digesting its food well, it should be given during the last few months of the second year, small portions of finely cut up chicken, beef, mutton or fresh fish."

Begin to give green vegetables in small quantities about the middle of the second year. Peas, bean, spinach, and carrots are the best. They must be cooked until soft and pressed through a fine colander.

"Finkelstein's theory as to the troubles produced by the sugars and salts has been widely believed and disbelieved, but adds only one more chapter to this whole subject of infant feeding and points to the fact that many important questions are still in dispute."

The diet suggested in this article contains a liberal supply of milk. The milk contains both the fat-soluble A and water-soluble B vitamin. Milk also contains a growth vitamin.

The diet that supplies an abundance of milk must contain an abundance of mineral salts. These are contained in eggs and cereal.



Olive oil is a form of fat that seems to be digested well by young infants. This addition to the diet enables one to give them often an additional amount of fat. It, or cod-liver oil, may, of course, be used by inunction.

MOORE, H. L.: **The Intraperitoneal Use of Dextrose and Normal Salt Solution in the Treatment of Marasmus and the Severe Type of Malnutrition.** *Southern Medical Journal*, 1921, xiv, 393.

The results obtained in acute dehydrated conditions from the administration of fluids intrasinusly and intraperitoneally have been splendid and often spectacular. The method has been used for three years at the Dallas Baby Hospital in the treatment of certain types of chronic conditions in which there was more or less dehydration—the advanced cases of marasmus and the severe type of malnutrition.

There are some infants who in spite of proper nursing and scientific feeding, fail to gain in weight. Some of these show a complete digestion and take full feedings; many of them have normal appetites and the stools show a moderate degree of indigestion. Such cases have dropped below a certain level from which they cannot climb.

The purpose of the treatment is to give them a lift and start them on an upward course. This is done by giving daily 250 to 400 c. c. of a 5 per cent dextrose in normal salt solution intraperitoneally until there has been a steady gain in weight over a period of several days. Within a few hours following the first injection the vitality improves and by the third or fourth treatment the stools have become normal in number and appearance. Usually after the second day, the loss of weight is checked and by the fourth day they begin to gain. After gaining steadily for a few days treatment is discontinued and rarely needs repeating. The author has not had to give more than a second lift. He has seen several patients whose condition was so desperate on admission to the hospital that it was necessary to give from 75 to 150 c. c. through the longitudinal sinus, and to back it up by giving immediately the usual amount into the peritoneal cavity.

No benefit was derived by tuberculous, syphilitic or premature infants. In the subsequent discussion, Dr. Marriott of St. Louis gave his views: The treatment of infants with severe nutritional

disorders, is to supply the lacking elements. They must be given food and water. The method of intraperitoneal injection is a practical one for giving both of these essentials when it is not possible to give enough by mouth on account of vomiting and diarrhea. Much larger amounts of food and water may be given intraperitoneally than intravenously or subcutaneously. The procedure throws less of a strain on the heart than does intravenous injection and is less painful than hypodermoclysis. In the treatment of the severe nutritional disturbances known as marasmus, cholera infantum, athrepsia or intoxication, intraperitoneal administration of glucose and saline is almost as valuable as is the injection of antitoxin in cases of diphtheria.

If an infant is allowed to become dehydrated and to stay in this condition for too long a period of time, the body may be so harmed that life cannot be saved by the administration of fluid.

Dr. Marriott has seen more than a thousand intraperitoneal injections, with no death as a result of the procedure. Strict asepsis must be observed, a blunt needle must be used and the abdomen must not be distended with gas at the time of injection. After injection of glucose solution troublesome distention sometimes occurs, which may interfere with the respiration, but this quickly subsides and does no permanent harm.

Dr. Harper of Selma, Ala., had under his care an infant who could not retain a drop of water. It was very much dehydrated and was kept alive for three weeks by giving it intraperitoneally night and morning from 250 to 270 c. c. of dextrose solution.

The apparatus used must be absolutely sterilized by boiling. The solution must be sterile. Laboratory glucose must be used, as ordinary glucose, develops acids when it is boiled (Marriott). Avoid using too much solution. If abdomen is already distended with gas, empty bowels with an enema. Injection is to be given in the median line and just below the umbilicus. The needle should have a short bevel and as soon as the peritoneal cavity is entered, the point of the needle should be turned up and held against the parietal peritoneum to avoid injury to the intestines. Be on the watch lest a distended bladder be punctured. The percentage of glucose used is 5 per cent. A ready way to determine the percentage is to multiply the number of ounces required by the per cent and divide by 40. The result will equal the number of level tablespoonfuls, *i. e.*, to make up a pint.



of a 5 per cent solution multiply the 16 ounces by 5.80. Divided by 40 equals two tablespoonfuls.

Dr. Moore finished the discussion by describing a case of his. An eighteen months' old child after sixty days of infectious diarrhea, was brought to the hospital. It looked as if it could not live two hours. It was blind, a toxic amblyopia. It was unconscious and did not move arms or legs for days. It was in such a state of decomposition that the odor in the room was very offensive. After giving 100 c. c. dextrose solution intrasinally, 400 c. c. were immediately given intraperitoneally. In picking up the skin to thrust the needle through the abdominal wall, the skin tore some three inches in length about two inches away from the part held. This child recovered and is perfectly well today and normal in every visible respect.

LEWIS, D. M.: **Measuring Rods of Infant Mortality.** *American Journal of Public Health*, 1921, xi, 721.

"The study of results from rural investigation of infant mortality gave evidence that the predominant content of such mortality lay in the two types of disease, namely, infant diarrhea and the respiratory communicable diseases. Municipal observations on the control of communicable diseases had pointed to the possibility that congenital malformations, prematurity and debility, as a cause of excessive deaths, were susceptible of analysis in terms of the same two types of diseases".

"There would seem evidence that the 25 per cent of, or greater mortality of the first month, in excess of an irreducible constant, is irrespective of place, year or class, determined by the amount of respiratory and diarrheal diseases".

INFANT MORTALITY RATES, UNITED STATES, 1919, ACTUAL RATES  
FROM BUREAU OF CENSUS:

	Actual Rate	Correlated Rate
Total registration area . . . . .	86.6	88.7
Total registration area, males . . . . .	95.8	94.6

Total registration area, females.....	77.0	82.6
Total registration, cities, total.....	89.3	91.7
Total registration, cities, males.....	98.3	97.2
Total registration, cities, females.....	79.3	85.4
Total registration, rural, total.....	84.1	85.8
Total registration, rural, males.....	92.9	88.7
Total registration, rural, females.....	74.7	79.8
Massachusetts, cities, males.....	99.4	99.4
Massachusetts, cities, females.....	79.3	87.1
Massachusetts, rural, males.....	89.5	92.1
Massachusetts, rural, females.....	73.3	76.1
Vermont, cities, males.....	157.1	146.6
Vermont, cities, females.....	80.6	98.8
Vermont, rural, males.....	86.0	97.0
Vermont, rural, females.....	71.6	75.9
N. Carolina, cities, males.....	135.7	121.3
N. Carolina, cities, females.....	111.1	99.7
N. Carolina, rural, males.....	89.0	67.1
N. Carolina, rural, females.....	73.6	70.9
S. Carolina, cities, males.....	151.6	122.3
S. Carolina, cities, females.....	126.5	99.7
S. Carolina, rural, males.....	119.8	102.5
S. Carolina, rural, females.....	101.3	91.2
Minnesota, cities, males.....	79.6	66.1
Minnesota, cities, females.....	59.0	54.6
Minnesota, rural, males.....	74.7	74.3
Minnesota, rural, females.....	57.6	65.8
California, cities, males.....	69.5	50.5
California, cities, females.....	58.5	47.1
California, rural, males.....	86.1	64.3
California, rural, females.....	70.9	59.9
New York City, males.....	90.5	92.3
New York City, females.....	71.7	81.7
Baltimore, males.....	111.9	108.1
Baltimore, females.....	82.5	94.8
Minneapolis, males.....	74.7	67.8
Minneapolis, females.....	54.2	46.9
San Francisco, males.....	70.5	69.3
San Francisco, females.....	51.9	58.3



FABER, H. K., AND JAMES, C. A.: **The Range and Distribution of Blood-pressures in Normal Children.** *American Journal of Diseases of Children*, 1921, xxii, 1.

Normal means and standard deviations for systolic, diastolic and pulse pressures and for pulse and pulse pressure have been compiled for boys and girls separately, by year, between the ages of 4 and 16 years.

Reference tables for clinical applications are given: Mean systolic pressure shows no significant difference between the sexes within the period studied. Mean diastolic and mean pulse pressure do show significant sexual differences. Standard deviations are in practically all cases greater for girls, indicating a normally greater variability in female children, which is particularly marked during adolescence. Illustrative examples of the method of measuring deviations in various pathologic states are given. The frequent occurrence of states of hypotension in children is pointed out in contrast with the relatively greater frequency of states of hypertension in adults. Note is made of the common occurrence of hypotension in bronchial asthma in children.

SCHUCK, B.: **New System for Dietaries** (Das Pirquetsche System der Ernährung und seine Gegner). *Zeitschrift für Kinderheilkunde*, 1921, xxviii, 62.

Rubner measured the amount of calories by the body surface expansion. He said that the food requirements of the resting hungry animal is directly proportionate to its body surface and decreases in the same proportion. This very difficult computation has practically not been carried out by the practitioner. It was converted into a system of calories and body weight. The requirement of nutrition is not proportionate to the weight. The caloric requirement from the young infant to the adult decreases from 100 calories per kilogram to 30 to 40 calories per kilogram. In the first year of life this proportion was easily figured out and widely used, but it is hard for the general practitioner to carry it on beyond this age. The empirical handling went by instinct of the child, the mother, or the nurse. A normal child generally eats too much, and not too little.

The very lively child without much appetite was stuffed with concentrated foodstuffs, especially sugar and fat.

Rubner's standard values do not sufficiently recognize the demands of the working body. Pirquet therefore sought another formula. He found the relation between the sitting-height and body-weight. In other words, a cube, one side of which would be equal to the sitting-height, could contain 10 people of normal nutritional condition. The third root of the ten fold weight equals the sitting-height. The author takes the sitting-height, which is a linear measure, and can be taken by a tape measure. This measurement simultaneously contains the cubic root of the ten-fold of the body weight. In the sitting-height by itself he arrives at the square of the sitting-height and the cubic root to the ten-fold weight cube square.

Pirquet endeavored to arrange the nutritive value according to the intestinal surface. He shows that the length of the intestine equals the sitting-height times 10. Of course, this value is not altogether constant. The intestinal surface will vary according to breadth, villi, etc., and it does not amount to the absorbing surface of the intestine. The same would apply to the values of Mesh-Merordt's body surface. In all the endeavors to find the right proportion of calories, failure has been almost certain, as it is impossible for the layman, or even for the practitioner, to submit to an exact computation and a conversion of foodstuffs into calories. Some authors have used the egg as a unit, remembering that it contained 70 calories. Pirquet has taken as a unit human milk. It is remarkable that so many authors have disputed this standard. These standards have actually been recognized for a very long time and by everyone in trying to equalize infant feeding with cow's milk and addition of some sugar, etc. Even if human milk varies it is a natural basis to start on. Those opponents who say that Pirquet disregards fat and vitamin, have not studied his tables.

CARSTENS, C. C.: **Child Protection and Home Finding.** *Public Health Journal of Toronto*, 1921, xii, 169-174.

The work of a Children's Aid Society is two-fold:

(1) Child protection—which involves the creating of a desirable environment for the child in its own home.



(2) Child aid which consists in finding a new home, affording just the right setting for the child, in the event of the natural home being found entirely unsuitable.

A children's protective agency should offer protection from physical neglect—apart from medical neglect or concern for sex standards. The number of this type of problem is by all means the largest although prohibition has resulted in a considerable reduction. Medical or surgical neglect must be investigated and intervention carried out; neglect of six standards should call for investigation and if possible, correction of conditions—removal of the child to proper environment, etc. While there are agencies in all our communities that provide thoughtless and easy money—without case work as a rule but sometimes with case work—a good children's protective agency can, and does work to prevent dependence, realizing that the spirit of independence is the greatest safeguard for the family's virtues. Even the widow of good character bringing up children with the aid of mothers' allowances, has a greater struggle to bring up her children into decency and education and all those elements in training for community life, than the one who stands entirely independent.

The author is not in favor of enforcing maintenance proceedings in every case of illegitimacy, but is very much in favor of considering its possibility in every case. Children should be protected against contact with the use of drugs, gambling, etc. to which, unfortunately, our courts and public bodies are not very sensitive. The delinquent should be protected; he should first of all be given a square deal; *i. e.*, removed from his environment, if this is below par and placed in a good home, before he is committed to an institution. If he does not make the right response he should then be committed. If he does respond he is protected from the leveling-down process of every institution for delinquents, however good it is. The protection of the delinquent so that he may not get into contaminating associations, and he may be saved from too close contact with his class, has saved many a delinquent.

In examining 6,500 cases, the author found only 6 per cent to be cruelty and 94 per cent something else. The prevention of neglect is a much larger problem than that of cruelty. The Children's Aid Function utilizing both free and boarded homes is based upon a broader knowledge of the child's needs, and therefore, what is needed for a good children's society is what might be called a preventive

clinic, which has two elements in it: (1) an aggressive study of the child's physical needs, so that everything possible physically may be done for the child; and (2) the mechanism for a personality study. A thorough psychologist is essential, one who has a knowledge of case work.

CUMSTON, C. G.: **Enuresis. Notes on Treatment of Some Common Affections.** *Therapeutic Gazette*, 1921, xiv, No. 3, p. 171.

*Treatment of Nocturnal Enuresis.*—Chloral, antipyrin, belladonna, and its alkaloid atropin are the only antispasmodics that have stood the test of time in the treatment of nocturnal incontinence of urine. Belladonna should be given in increasing doses; 1 centigram of the extract every evening at bed time, increase 1 centigram every four or five days until 15 to 20 centigrams are reached. This maximum dose is continued for several weeks and then progressively decreased.

Atropin should be given in three doses—morning, noon and night—in a teaspoonful of sugar-water. The following amount should be mixed: atropin sulphate, 1 centigram in 10 c. c. of distilled water; of this, for young children, begin with two drops three times a day, increasing the dose progressively until a maximum of 15 to 20 drops is reached. For children 6 years of age, begin with 5 drops three times daily, increase progressively to 30 drops per day. In children from 13 to 14, 50 to 60 drops is the maximum dose, begin with 10 drops three times a day. The maximum dose is continued for 2 or 3 days, then progressively decreased. As soon as symptoms of intoxication are noted, such as dryness of the mouth, disturbance of the vision, etc., stop the medication, beginning again in about 2 weeks in moderation.

*Rhus aromaticus* often acts well in the control of enuresis, given in the form of a fluid extract in the dose of 5, 10, up to 30 and 60 drops a day.

Antipyrin is useful in some cases, given in the form of a tablet or cachets, with an equal quantity of sodium bicarbonate, and followed with a cup of hot drink. The dose is 1 gram at 6 o'clock, 1 gram at 8 o'clock. There will be no tendency to void urine until about 5 a. m. By giving the 6 o'clock dose at 9, and the 8 o'clock



dose at 11, enuresis in the second half of the night may be controlled. The child should not take more than 2 grams of antipyrin in 24 hours. By combining this with sodium bicarbonate, children will present a peculiar tolerance for the drug.

The author states that results obtained by antipyrin are somewhat better than those of any other drug.

Under surgical treatment, he notes the retrorectal injections of saline solution (Professor Jaboulay), and injections of saline solution or 1 per cent solution of cocain in the epidural space (Cathelin).

Remove any factors causing disturbance of the peripheral nervous system, especially the external genitourinary organs of both sexes. For vulvitis, nonspecific urethritis, or balanoposthitis use irrigations of potassium permanganate and instillations of silver nitrate.

If urine is alkaline give acid phosphate of sodium in doses sufficient to make the urine neutral. If urine be acid, sodium bicarbonate should be given. Continue treatment for some time, otherwise recurrences are apt to occur. If urine contains urates, give 2 grains of lithium daily for 10 days each month.

Diet should be largely vegetable, with a small amount of lean meat being allowed; if albumin is present give a mixed vegetable and milk diet; also do not give atropin or antipyrin in this case.

GITTINGS, J. C., AND DONNELLY, J. D.: **The Clinical Value of Intraperitoneal Injections of Salt Solution.** *Archives of Pediatrics*, 1921, xxxviii, 452.

The authors stated that in the treatment of dehydration seen so frequently in children suffering from gastro-intestinal disorders with diarrhea during the summer months, they had found that the most efficacious means of introducing fluid was by the use of the nasal tube, or by intraperitoneal injections. The other methods are too painful or allowed the introduction of insufficient amounts of water.

Intraperitoneal injections seemed to be safe provided the bladder was empty, the abdomen was not distended and the fluid was introduced slowly. The amounts to be used vary usually from 150 to 300 c. c., the optimum to be judged by the subjective and objective

symptoms. Disturbance of respiration and pulse and increasing distention indicate withdrawal of the needle. One hundred and sixteen patients received 352 intraperitoneal injections of normal saline. Comparison with the mortality showed the oldest cases and those having the highest weight on admission showed the greatest proportion of recoveries. The mortality increased *pari passu* with the number of injections, being the highest in those receiving 10 or more. Dehydration was determined upon the degree of the loss of resiliency in the skin and subcutaneous tissues when pinched into a fold. According to this criterion, those with the least resiliency showed the highest mortality and *vice versa*, although in some cases the dehydration was entirely relieved without preventing the fatal issue.

Autopsy upon 9 of the patients showed that no injury had been done to the peritoneum or any of the abdominal structures.

The authors concluded that the forced ingestion of water by nasal tube deserves a more extensive trial; that 300 c. c. probably represented a maximum for intraperitoneal injection in any infant under one year of age; and that smaller amounts administered more frequently were safer for infants weighing less than 4,000 grams (about 9 lbs.).

CARTER, W. E.: **Enuresis.** *Archives of Pediatrics*, 1921, xxxviii, No. 5, p. 285.

The author discusses the various theories which have been held in regard to the etiology of enuresis, discarding nearly all of the well known ones as the factor of local disturbance, which Buckingham ruled out with the statement that bed-wetting is as common among circumcised Jewish children as it is among other children. Nor is it due to debility as it is as common among the sturdy as the weak children. Likewise the reaction of the urine is not to be held responsible, nor intestinal parasites.

Sachs, in 1896, believed in training the nervous system as a cure for the trouble. And others since have shown the processes of inhibition and acceleration held by the upper centers over the lower. The lower centers are the only ones in infancy involved in defecation and micturition; as the nervous system develops, the control over this lower center increases. Complete function can be hastened through education by repetition.



*Treatment.*—All local morbid conditions should be sought for and corrected as their elimination is the proper thing for the health of the child. Remove infected tonsils and other foci of infection. If foreskin retracts easily, it should be left alone; correct constipation, and correct high concentrations of urine by giving plenty of water early in the day.

These things done, then train the nervous system; this is done with a whole-hearted coöperation of the mother or attendant. Success in the treatment depends almost entirely upon how carefully the instructions are carried out by the mother.

The author takes a careful history of the patient first, which elicits the following information: Average number of nights per week the bed is wet; has this been continued since birth; how soon does it occur after retiring; does the act awaken the child; does the child sleep soundly or lightly; is the child nervous; if much fluid is taken after 4 p. m.; if the condition is hereditary or is found among other children in the family.

He gives them a chart of instructions as follows: Allow no fluid after (determined) hour; awake the child thoroughly (wash face with cold water if necessary) at a (determined hour, and take him to the toilet; again as often as determined through the night. Keep foot of bed elevated about 6 inches.

Each day have the child write on a piece of paper "I did not wet the bed last night" or "I wet the bed last night". This paper is brought to the office.

To teach him voluntary control of the bladder take the child to the toilet once in the forenoon and once in the afternoon, and have him stop the process on command, thus "Stop"—"Start"—"Stop"—etc. The author knows of nothing that tends to educate voluntary control of the urinary center so promptly as this simple procedure.

The author said little need is found for belladonna and strichnia, though there may be cases in which either may play a useful part in the training of the nervous system.

## SECTION ON ROENTGENOLOGY AND ELECTRO- THERAPEUTICS

DE COURMELLES, F.: **Accidents from Radium and the X-ray (Radiotherapy and Radiumtherapy).** *American Journal of Electrotherapeutics and Radiology*, November, 1921, xxxix, No. 11, p. 445.

Dangers in the more or less injudicious use of radium similar to those found in the field of x-ray therapy have occurred frequently in the course of serial administrations. Latulle and Tuffier report lesions of the uterine mucous membrane, caused by radium being applied to noncancerous uterus, for the reason that the scars produced cause the vessels to gape, later becoming infected with pyogenic germs. Others report idiosyncrasies or radio sensibilities.

It has been recently proved in London that the living creature is much more sensitive to x-ray emanations than the photographic plate; a rat exposed 1/40 of a second shows a reduction of 20 per cent in its lymphocytes, and longer exposures show a drop of 50 per cent. There are also modifications noted in the composition of the blood, as well as the rapid beating of the heart. The skin lesions are often mutilating, and sometimes fatal, especially to the radiologists. An autopsy held upon the body of one who died in 1914 showed profound anemia, had considerable changes in the blood, advanced glandular atrophy and the well-known lesions of extreme exhaustion.

Another case reported is that of acute plastic anemia, closely resembling the cases of death from radium, and showing an analogy in other ways to radium. There have been five cases of radium death reported. The case referred to above is a man of 43, worker in radiography for 15 or 18 years. His physique was good, he gained weight, and apparently his health had never been better. Recently his blood submitted to a casual examination showed red cells



4,200,000; white cells 7,200; hemoglobin 85 per cent; differential lymphocytes 38 per cent; polynuclears 60 per cent; eosinophils 17 per cent. This suggested malady, which terminated five months later. Symptoms as shortness of breath and loss of appetite, with pain in the back, did not develop until two months before his death. The red cell count rapidly fell, the lowest being taken was 1,500,000, with whites 840, and hemoglobin 18 per cent; differential count —, polynuclears 41 per cent, large lymphocytes 54 per cent, small lymphocytes 4 per cent; eosinophils and vasophils 0; hyalins 1 per cent; macrocytes, microcytes, poikilocytosis also present.

It is recommended that blood examination be made at least once in six months in case of radiologists.

**VIOL, C. H.: History and Development of Radium-therapy.** *The Journal of Radiology*, September, 1921, ii, No. 8, p. 29.

Radium was discovered by the Curies in 1898, and an action by the radium rays on the skin was first recorded by Walkhoff in 1900. Giesel a little later described an experiment wherein, after a two-hour action by 0.27 gram of a radium preparation, enclosed in a double celluloid capsule, and applied to the inner surface of the forearm, there was a very intense reaction with pigmentation after two to three weeks, followed by vesiculation and scabbing as in case of a burn. Following the healing, the hair did not grow on the rayed spot. Becquerel, in 1901, while using a very active radium preparation, carried the tube in his vest pocket for several hours. Several weeks later a severe inflammation of the skin appeared, which was attributed to the action of the radium. Prof. Curie then made an experiment on himself, and as a result of the discovery of this new property of radium, loaned a specimen of radium to Dr. Danlos, of the St. Louis Hospital, Paris, for medical purposes. In 1901 Danlos reported on the treatment of lupus erythematosus by radium chlorid.

As rapidly as the amounts of radium available permitted, the experiments in the use of radium were taken up by other workers in Europe, and America, and in the years up to 1910, radium treatment was favorably suggested for many conditions, including many malignant and benign growths. During this early period the main contributors were the French and German schools, the English and

American contributions being much fewer in number. In this country the author mentions the pioneer work of R. Abbe (Radium in Therapeutics, *Boston Med. and Surg. Jour.*, 53, 1904), Wm. J. Morton (Treatment of Cancer and Lupus with Radium, *Med. Record*, Nov. 9, 1907), Williams, of Boston, (Early Treatment of Some Superficial Cancers, Especially Epitheliomas, by Pure Radium Bromid Rather than Operation or X-rays, (*J. A. M. A.*, 51, 894, 1908) and H. Roberts (Practical Radium. The Causation of Cancer and Its Curability by Radium. The Practical Uses of Radium in the Treatment of the Obstinate Forms of Diseases, 1908).

The author simply mentions the names of men whose work has come to his attention. During the first ten years of its development radium therapy struggled with two great difficulties which made advances in the work very slow. There were the small amounts of radium which were available for the work and the lack of a suitably accurate method for standardizing radium preparations for therapeutic use.

In order that there might be greater accuracy in the standardization of radium preparations, the Congress of Radiology and Electricity, meeting in Brussels, in 1910, appointed a committee to make arrangements for the preparation of an International Radium Standard, and Mme. Curie was asked to prepare the standard. This, as made, consisted of 21.99 mgm. of pure radium chlorid, sealed in a thin glass tube. In March, 1912, this standard was compared by the committee, meeting in Paris, with similar standards made by Hoenigschmid from pure radium in the possession of the Institute for Radium Research of the Vienna Academy of Sciences, the material for the Vienna prototypes having been purified for atomic weight determinations, the three tubes containing 10.11, 31.70 and 40.43 mgm. of radium chlorid, respectively. Comparison of the Curie tube with the Vienna tubes showed that the preparations agreed within the limits of the errors of measurement, and certainly within one part in three hundred. The standard prepared by Mme. Curie was accepted as the International Radium Standard and is preserved at the International Bureau of Weights and Measures at Sevres, near Paris. Duplicates of the International Standard have been prepared for use by the governments of the world, that for the United States being in the possession of the U. S. Bureau of Standards, at Washington.



Along with the new radium standard came the more general use of the gamma ray method of comparing quantities of radium, and this advance has been of the greatest importance in permitting physicians to know exactly with what they are working, and so make it more readily possible for the accurate description of their methods, and for the duplication of their work by others.

The radium production from Bohemian pitchblende was maintained as a government monopoly by the Austrian government, and the independent production of radium in France and Germany up to 1914 was mainly from ores which were imported, high grade carnotite from Colorado being, in the several years prior to the outbreak of the European war, the main source of radium. Even this ore, according to the statistics, could not in the aggregate have yielded any very large amount of radium, less than 25 grams probably. (See U. S. Geol. Survey Report for 1914, Report on Uranium, Vanadium, and Radium, by F. L. Hess). In the United States, Lockwood, of Buffalo, N. Y., had worked from 1903, in a vain effort to produce high purity radium salts, and it was not until 1913, that the first high grade radium was prepared in this country in the laboratory of the Standard Chemical Company, at Pittsburgh. Since 1914 the production of radium has been carried on mainly in this country, carnotite being the source, and it is conservatively estimated that to date (June, 1920), the total aggregate production in the world of high grade radium salts probably does not exceed one hundred and thirty grams of radium element contained, and of this amount between 80 and 85 grams have been produced in the United States. While the figure for the world's total production is in the nature of a guess—the figures for the production in this country are reasonably accurate, since for example it is known that the Standard Chemical Company, of Pittsburgh, has produced over 55 grams to date.

Prior to 1912 the most extensive work in radium therapy was that of the French School, of whom the author mentions Drs. Danlos, Beclere, Darier, Dominici, Wickham, Degrais, Baret, Chevrier, Cheron, Ruben, Duval, Fabre, Oudin, and Verchere, Faure-Beaulieu, Bavet, and de Beurmaun. Other pioneers worthy of special mention are Abbe, Williams, Davidson, Lassar and Blaschko.

The indications for radium in various conditions as given by Dr. Baret in his *Precis de Radiumtherapie* (Paris, Maloine, 1912) are noted here.

Cutaneous cancer, lupus vulgaris, lupus erythematosus, port wine stains, psoriasis, Danlos, 1902. Leukoplakia, Rehns and Salmon, 1904. Keloids, Willams, Werner and Hirschel, 1904, Wickham and Blaschko, 1905. Eczema, Lassar, 1904, Blaschko, 1906, Wickham Degrais, 1908. Sycosis, acne rosacea lichen ruber, Blaschko, 1905. Eczema, Lassar, 1904, Blaschko, 1906, Wickham and Degrais, 1906. Warts, Abbe and Boikoff, 1904. Pigmented nevi, Hartigan, 1904. Epithelioma of the mucous surface of the lips, Dominici, 1908. Epithelioma of the buccal mucosa, Gussembauer (1 case); Abbe (2 cases); Dominici (6 cases). Epithelioma of tongue, Dominici, Angiomas, Wickham and Degrais, 1906. Mycosis, de Beurmann, Dominici and Rubens-Duval, 1907. Vanthoma, Bercat and Bord. Rhynophyma, Wickham and Degrais, 1909. Breast cancer, Lassar, 1904, Abbe, 1905, Hartigan, 1905, Morton, 1905, Dominici, Haret. Cancer of cervix, fibroids, Abbe, 1905. Fibroids and metritis, Oudin and Verchere. Later works by Dominici, Cheron, Rubens-Duval, Wickham and Lacapere, Febre and Bender. Cicatrization of wounds, Chevrier. Exophthalmic goiter, Abbe, 1905.

Following the experiments of Danlos, the crude applicators were modified by later workers, many of the forms employed being still in use today. The varnish surface plaques were introduced by Danne, and the metal tubes, filled with radium salt are credited to Dominici. These tubes with a sharpened point served for introduction into tumors. For lighter treatment over large areas the flexible linen, or "toile" applicators were made. Dominici first showed the importance of metal filters or screen to absorb the undesirable irritating soft rays, when treating growths requiring considerable irradiation, this method being called that of the "surpenetrant" or ultra-penetrating radiations.

In 1912 there were already a number of radium institutes where therapeutic treatments with radium were being carried on extensively. The most important at that time, in point of experience, was probably the Laboratoire Biologique du Radium, in Paris, under the direction of Dr. Degrais. Second to this ranks the work at the Hospital St. Louis, Paris, of Dr. Dominici. At Heidelberg, under the direction of V. Czerny, a radium department carried on work, and at the General Hospital in Vienna, in 1912, a radium department was established with half a gram of radium element available.



In London, in August, 1911, there was opened the Radium Institute, under the direction of a committee of leading surgeons, A. E. Haywood Pinch being the medical superintendent. This institution was credited with owning two grams of radium bromid, the largest amount then available at any one clinic in the world.

In 1913, the medical world was thrilled by the reports given at the Gynecologic Congress at Halle, when Kroenig and Gauss, Bumm, and Doederlein reported their astonishing results obtained by the use of massive doses of gamma rays from heavily screened mesothorium preparations in the treatment of carodnoma of the cervix uteri. A "radium fever", as it was called, came over Europe, particularly in England, Germany, Austria and Italy. The production of radium on a larger scale, which began about this time, could not begin to meet the demand. Funds were raised by public subscription to endow hospitals with sufficient radium, and many of the governments of states and cities provided funds for the same purpose. In Manchester, England, public subscriptions secured a gram of radium element for the Radium Institute, and in a like manner, a half gram of pure bromid was secured in Sheffield, England. The Prussian government purchased a gram of radium element, the Bavarian government a half gram, and a great many of the German cities likewise purchased quantities of radium for use in the local hospitals.

In the United States radium therapy was not received very cordially at this time. A few men, like Abbe, Kelly, Simpson, Aikins, and Dieffenbach, were working in the field, but few would believe their statements. Then came the war in 1914, with its upsetting of communications. During 1915, and in spite of the adverse propaganda of the Bureau of Mines, more and more the American physicians came to realize the importance of radium therapy, and backed their belief by securing the precious material for use in their own practice. The poor communication with Europe, due to the war, the fact that the literature of radium therapy was largely in German and French journals, not accessible to very many, resulted in an American School of Radium Therapy, which rediscovered, and improved on many of the results of the pioneers. It would go beyond allowable limits were the writer to try to indicate these points in detail as it has been his privilege to observe the development of Radium Therapy, says the author, in the United States since 1913. Intelligent understanding of the limitations of radium therapy, coopera-

tion between the surgeon, the roentgenologist and the radium therapy will go far in the combatting of cancer.

The author refers to the research work which is being carried out at the Memorial Hospital, in New York, and where Dr. Janeway is developing the method of employing radium emanation tubes inserted directly into the tumor growths. This promises to be one of the most important advances made in radium therapy, and if later observations confirm the earlier ones, this work will materially influence the trend of radium therapy in this country.

A conservative estimate at this time places the number of physicians, hospitals and institutions in this country who are employing radium at four to five hundred, and the total quantity of radium employed at between thirty-five and forty grams. Based on present production, which, of course, can be greatly increased if necessary, additional radium is available at the rate of from twenty to thirty grams per year.

There have been recently a number of disquieting statements by Dr. R. B. Moore, of the Bureau of Mines, says the author, indicating that the radium supply of the world and particularly that which will come from the Colorado carnotite is painfully small. The writer has been arguing this matter with Dr. Moore since 1914, at which time Dr. Moore's predecessor, Dr. Parsons, said in a hearing before a Congressional Committee that "we cannot estimate as much as 200 grams of radium metal available in any known deposits at the present time". Without in any wise exhausting the Colorado carnotite field, or barely touching the Utah deposits, over eighty grams of radium have since been produced. In spite of Dr. Moore's pessimistic view, there is other better evidence that several thousand grams of radium will be obtained from the carnotite deposits. It is, therefore, unlikely that radium therapy will languish for lack of sufficient radium.

This country now leads the world in all fields, with the largest known radium deposits, the largest manufacture of radium, the greatest institutes for radium therapy, and far and away the largest amount of radium thus employed.

ELLIS, L. E.: **Intestinal Radiography for Chronic Appendicitis.** *Medical Journal of South Africa*, April, 1921, xvi, No. 9, p. 163.

After preparing the patient suitably, he is placed standing in



front of the x-ray tube and swallows milk made opaque with bismuth or barium. As this is swallowed its progress into the stomach watched with the fluoroscope, until 20 to 25 ounces had been taken. The whole esophagus can easily be viewed if necessary. A plate is then taken, giving a record of existing gastric appearances. The patient then has further plates taken lying down, at intervals of one hour, three hours, and seven hours. A 24-hourly examination is often instructive, while sometimes the lower parts of the canal may have to be kept under observation for 48, or even 72 hours. When completed, the whole series of plates is assembled, and the case gone into as a whole, both from the clinical as well as from the radiological standpoint.

In chronic appendicitis there are grouped certain features that seemed to the author to make it a striking and definite entity of its own, almost a classical picture. A Lane's kink nearly always exists. The appendix may be shown apparently adherent to the terminal ileum. Where the appendix is not shown, there is a point highly suggestive of chronic inflammation, which has occluded the lumen of the appendix, producing an obliterative sclerosis. When the appendix shadow is seen it often shows indications of a pathological condition, sometimes being obviously kinked, often club shaped, and not infrequently the shadow of its contents is interrupted at varying intervals, also showing a very irregular calibre.

A marked delay in the progress of the opaque meal often occurs at the ileocecal region, caused by mechanical reasons, while hypertrophy or dilatation of the later portions of the ileum, owing to the effort of the latter to overcome this obstruction, is to be observed.

Distortion of the cecum or ascending colon is not infrequent, but a very constant sign is the kinking and drawing down into the right iliac fossi of the proximal portion of a transverse colon. This traction on a transverse colon is by the omentum, which frequently becomes involved in the inflammation about the appendix. Two kinks are generally present, one at the hepatic flexure, and the other at a variable distance beyond. These signs are not all present always in the same case, though they may be found in many cases. One has to build a diagnosis upon a small or large proportion of the findings mentioned. Some of the kinks observed by x-rays are not always shown to permanently exist. One must be cautious in giving too definite a report. As a rule, the radiographic indications of chronic

appendicitis with its resulting complications are frequently supported by subsequent operative findings.

In many cases of chronic appendicitis no symptoms are present and even clinical signs are lacking. There may be, otherwise, indications of gastro-pyloroduodenal dyspepsia, or even ulceration. If pain be located in the lower abdomen it does not have any particular reference to the right iliac fossæ.

The author stresses the fact that x-ray examination is only an auxiliary method of investigation. It should be checked by a thorough clinical test. And where the later fails to establish a clear diagnosis, it may be rendered much clearer with the x-ray findings.

There are four cardinal features: 1st, delay in the progress of the opaque meal at the ileocecal region; 2nd, the Lane's kink; 3rd, a controlling, pathological appendix; and 4th, a pulling down and kinking of the proximal portion of the transverse colon.

MACKEE, G. M., AND ANDREWS, G. C.: **Injurious Combined Effect of Roentgen Rays or Radium, and Topical Remedies.** *Journal of the American Medical Association*, November 5, 1921, lxxvii, 1489.

Since x-rays and radium are used extensively it is well to know that there is danger associated with the use of strong irritating remedies to parts that have been or are to be rayed. Serious injury has been falsely placed on the x-ray or radium, whereas it rightly belongs on strong medication and irritation of topical remedies.

Irradiation increases the sensitiveness of the skin to stimulating, irritating, and caustic agents. The degree of hypersensitiveness depends upon the dose of x-rays or radium, and on the time interval between irradiation and application of the topical remedies; the strength in character of the remedies and manner of application are also factors. Small doses of x-ray or radium combined with strong local medicaments may result in severe injury; likewise, large doses of x-ray or radium combined with mild local medication may give the same results.

Hypersensitiveness is very marked immediately after a single intensive dose of x-ray or radium. This lasts for about a month, if there is a first degree radiodermatitis with erythema. Hypersensitiveness lasts for one month after its disappearance. If permanent



injury as telangiectasia, atrophy, or scarring is present, the hypersensitive lasts for months and even years.

*Hypersensitiveness From Topical Applications.*—Stimulants, irritants, and caustics make the skin hypersensitive to irradiation, though usually the skin will act normally to radiation one month after topical applications have been discontinued, but if such produce severe reaction the skin will be hypersensitive for one month after the healing of this reaction.

*Remedies That Cause Trouble After Irradiation.*—Any drug, chemical, remedy or agent that can cause an inflammatory reaction of the skin may make the latter susceptible to irradiation. The list includes chryarobin, scarlet R, iodine, mercury, tar, iodoform, sulphur, etc., caustics, ultra-violet light, refrigeration, prolonged applications of heat or cold, and friction, especially if combined with liniment. There is a case reported of a dermatitis following x-ray examination for pulmonary tuberculosis. The dermatitis appeared three weeks later, but was directly excited by a number of neosilver arsphenamin injections.

Emphasis is placed on the fact that these reactions cannot be distinguished clinically and pathologically from radiodermatitis. The author cites 8 cases, one of which we review:

*Case VI.*—Woman received three erythema doses of filtered roentgen rays to the breast at intervals of six weeks. The dose was  $21\frac{1}{2}$  Holtzknecht units at skin distance, filtered through three millimeters of aluminum, with a result of a first degree reaction. Three months after the last irradiation the skin showed slight atrophy and loss of hair. An ointment of 4 per cent salicylic acid, 10 per cent cade oil, and 10 per cent ammoniated mercury, was applied to the affected part. In less than 2 weeks after a few applications of the ointment a very painful indolent ulcer resulted, which could not be distinguished from a third degree dermatitis. It required six months to heal with an end-result of scarring, atrophy, and telangiectasia.

A physician about to prescribe topical applications of an irritating nature should first find out whether such parts have been recently x-rayed or irradiated, or whether they are likely to be.

Roentgenologists about to apply x-rays or radium should first find out whether irritating topical remedies had been recently used; and the patient should be cautioned against additional local treatment, without the knowledge and consent of the x-ray physician.

LAHEY, F. H.: **A Few Remarks on the X-ray in the Diagnosis of Chronic Cholecystitis.** *Boston Medical and Surgical Journal*, July 14, 1921, clxxxv, No. 2, p. 61.

X-ray evidence should not be accepted as a diagnosis, rather as evidence to be correlated with history, physical findings, and other laboratory evidence.

This is particularly true in regard to x-ray evidence as related to diagnosis of chronic appendicitis and adhesions about the cecum or terminal ileum, as well as regards cholecystitis and adhesions between the gall-bladder and the pylorus.

X-ray reports stating positive x-ray diagnosis of chronic appendicitis are quite wrong and sometimes lead to erroneous conclusions, resulting in operative procedures which fail to relieve the patient. The author after several years' experience as operator in charity and private clinic of considerable size, finds himself at a loss to know how to arrive at a diagnosis of this condition even after employing all available diagnostic measures.

Many times the appendix is found bound firmly by adhesions, yet in a careful history there appears not the slightest indication of previous attacks or present ill effects.

The same may be said of doubtful cases of cholecystitis by presumptive x-ray evidence of this condition. Operative procedures undertaken largely upon such x-ray evidence will yield distressingly unsatisfactory results.

It would be better if the x-ray man did not report the results of his findings in terms of diagnosis, such as chronic appendicitis or chronic cholecystitis, lest a report of this kind be given undue weight by those who have not had the opportunity to estimate such evidence, swaying toward operation those inclined too readily to attribute to chronic appendicitis much of the indefinite discomfort which often occurs in the right iliac fossa.

It is very important that there should be a personal review of the plates by the surgeon with the roentgenologist, in order that one may weigh for himself the value of the evidence offered by this diagnostic measure. In this way the very person who can weigh its value, has the greatest opportunity to compare the findings with results.



The surgeon should hesitate to advise operation on the basis of x-ray findings without fairly typical symptoms, except as an exploratory procedure—when findings are suggestive of malignancy, or are urgent though unexplainable after use of all diagnostic measures.

**LAFFERTY, R. H.:** An Analysis of Eleven Hundred Roentgen Examinations of the Gastro-intestinal Tract. *American Journal of Roentgenology*, June, 1921. viii, No. 6. p. 315.

In these 1100 examinations the proportion between male and female was almost equal, 584 male and 516 female. In this series the largest number, 390, complained of general indigestion, nervousness and malaise. The next in frequency was 217 complaining of epigastric pain. These cases varied from intense hunger pain to vague discomfort, and include those symptoms which usually suggest diagnosis of ulcer. Following this, there were 180 cases of right-sided pain; including front and back, high and low, on the right side. Left-sided pain was noted in only 7 cases.

General abdominal discomfort was a symptom in 139 cases, varying from a fullness to a diffuse general pain. Then there was a group of 66 cases with symptoms, including gas, sour stomach, heart-burn, belching, etc., found in a patient who is "fair, fat and forty", causes one to think of some gall-bladder trouble.

Then there were 36 cases presenting symptoms that also sound familiar—frequent bilious attacks with vomiting of bile, nervousness and sick-headache.

In regard to the x-ray findings, the most frequent diagnosis made was the appendix. The author agrees with others in regard to this much maligned organ, and believes that if a patient with a barium meal is constantly watched, at some point during its passage, the organ can be demonstrated. Of these 301 cases, 117 of them were classed as chronic, these being the cases that showed adhesions, tenderness or constriction, or retention of barium after the cecum is emptied. Then there were 141 reported as simply patulous, while they were not pathological were conceded to be potentially so. There were also 43 cases listed as stasis and ulcer, which were probably of the chronic type. It is interesting also to note that 33 per cent of duodenal ulcer cases were accompanied by a patulous and chronic ap-

pendix. This occurrence suggests a possible cause of duodenal ulcer namely that the chronic appendix reflexly causes a pylorospasm or duodenal spasm and that this is followed by hyperacidity, causing or contributing to an erosion which gives the seat for an invading organism.

Then there were a class of cases, numbring 46 of dilated duodenum. Vanderhoof (*J. A. M. A.*, 1920, lxxiii, No. 8) describes the symptoms as nausea and vomiting, bilious attacks, headaches, and nervousness, many of which were due to extreme ptosis of the stomach, some to adhesions, and one or two by lordosis.

In regard to the liver and gall-bladder, pathology was located in 110 cases; 35 were reported as "suspicious gall-bladder"; 22 reported as gall-stones. There were probably most of these confirmed by operation.

The finding of cancer occurred 55 times; gastric 32; colon 7; rectum 2; gall-bladder and liver 9; esophagus 4; pancreas 1.

Epigastric pain was found in chronic appendix 75 times; duodenal ulcer 44 times; gastric ulcer 18; duodenal ulcer and appendix 15; pylorospasm 14; gastric carcinoma 7; gall-bladder with pylorospasm 6; kidney stones with spasm 5; cecal adhesions 5; spastic constipation 5; bad teeth and spasm 4; negative 4; dilated aorta 2; duodenitis 2; and dilated duodenum 1.

In the cases marked "Pylorospasm" alone, the cause might have been determined; many cases of chronic appendix were observed here, also the location of the lesion elsewhere, as kidney, gall-bladder, and colon.

There were 86 cases which had sufficient lesions to explain the pain, including ulcer, cancer, and duodenitis. In the remaining 121 the pain must have been due to pylorospasm.

KIRKLIN, M. D.: *The Role of the Roentgen Ray in Diagnosis of the Surgical Abdomen with Special Emphasis on its Use in the Gall-bladder and Appendiceal Regions.* *The Journal of the Indiana State Medical Association*, 1921, xiv, p. 1.

Reports show that from 60 to 90 per cent of gall-stones show in the roentgen ray examinations. George and Leonard claim to demonstrate from 85 to 95 per cent.



Gall-stones fall into one of two groups: (1) Stones which contain no calcium, and (2) stones which contain considerable calcium. The dense calcareous gall-stones are far in the minority, but are easily demonstrated when present. This may account for the fact that the study of gall-stones by roentgen ray methods has made so little progress. By far the greater number of gall-stones consist of a cholesterin nucleus with a calcareous coating. When the calcareous deposit is thin, which is the case in about 50 per cent, the stones are hard to detect. It is considered impossible to detect a pure cholesterin stone; but this is a rare entity. The question of roentgen ray diagnosis of gall-stones and pathological gall-bladders depends upon the ability of the roentgenologist to use the correct technic in demonstrating them on the plates and to correctly interpret the various shadows produced by pathological gall-bladders, and the stones with very small amount of calcareous deposit, for these are the stones which are encountered most.

A careful study of the clinical history of cases in which gall-stones are definitely shown by roentgen methods reveals the futility of expecting the classical gall-bladder symptoms to agree with the roentgen diagnosis. Experience indicates that only when a gall-stone passes or engages does it cause the typical gall-stone colic, and this is rare compared to the frequency of gall-stones.

Not only is it attempted to demonstrate gall-stones but any pathological gall-bladder. Even if no suspicious shadows be present, a number of roentgen ray findings following a barium meal are of assistance in the diagnosis of pathological gall-bladder, with or without stones, namely:

(1) Hepatofixation of the stomach, the pyloric region being drawn to the right and upward.

(2) A definite small area of pain to pressure localized to the outer side of the shadow of the duodenum.

(3) The pressure of Riedel's lobe of the liver when demonstrable following gas distention of the stomach and colon is a sign of gall-bladder disease in which jaundice is not present.

(4) The hepatic flexure of the colon may occupy an unusually high position.

(5) The emptying time of the stomach following a barium meal is usually much shortened, and the outline of the duodenum is well seen owing to a delay in the emptying time of the duodenum.

By means of the special technic for making and interpreting roentgen plates, a positive diagnosis may be made in so many cases that the negative diagnosis has become of considerable significance.

George and Leonard state that roentgen methods of diagnosing pathological gall-bladders has become so accurate that if there be no direct roentgen evidence of gall-stones, the surgeon should have preponderance of clinical evidence as a warrant in operating for gall-stones.

When a patient presents himself for examination there should first be made some plates of the gall-bladder and the kidneys. The chest should be fluoroscoped. After an opaque meal the stomach and duodenum are studied under the fluoroscope and plates made. The patient has to return at three, six, eighteen and twenty-four hours for further observations. If part of the meal is present at twenty-four hours he must return for further examination.

HARTMANN, H.: **The Elevated Position of the Pelvis in the Radiotherapy of Fibromas** (La position elevee du bassin dans la radiotherapie des fibromes). *Gynecologie et Obstetrique*, Paris, 1921, iii, 33.

Some surgeons, Souligoux, Hartmann and others have already pointed out the development of a premature senility, after a radiotherapeutic treatment. Radiotherapists are now beginning to insist on the possibility of intestinal lesions after the application of the rays. In Germany they have described rather serious phenomena accompanied by vomiting during the night which follows treatment. Franke (*Zentralblatt. f. Gyn.*, 1918, No. 1) has drawn attention to more serious accidents, vomiting, meteorism, profuse diarrhea, collapse. Franz (*Berl. med. Gesellsch.*, 6 Juin, 1917) has even seen death supervene, following the ulceration and necrosis of the intestinal wall, the lesions being most severe on the uppermost coils, which showed plainly that they were due to the action of radiotherapy. Haret (*Haret et Grunkraut, Presse méd.*, 4 December, 1920, p. 877) thinks that, being given the structure of the small intestine as an organ glandular by virtue of the glands of Lieberkuhn and at the same time lymphatic by virtue of its closely agglomerated follicles or the Payer patches, the sensitiveness of the intestine to raying is



not very different from the other pelvic organs treated. In treating fibromas of the uterus it is well to have the patient elevate the pelvis, this position tending to allow the coils of the intestine to fall toward the diaphragm and free the pelvic cavity. Haret advises placing the patient on an inclined plane, in the Trendelenburg position for treatment anteriorly given, and the pectoral position of Sims for posterior irradiations.

**KUMER, L.: Treatment for Roentgen and Radium Ulcers** (Ein Beitrag zur Therapie des Rontgen und Radiumulcus). *Munchener Medizinische Wochenschrift*, August 6, 1921, lxxviii, 1084.

There have been many remedies recommended for roentgen and radium ulcers. The only radical method, excision and subsequent transplantation cannot always be used on account of the location of the ulcer, and always is a rather extensive operation.

In Richl's clinic the water beds have been used for many years. Sacken had very good results with this method. The aim of this therapy is to keep every irritation from the patient's diseased parts. He does not need to lie on one side because the water bed does not exert any pressure. Pain is almost eliminated. By the submersion in warm water, the diseased parts have a better blood supply and in consequence hinder necrosis. Demarcation will set in more rapidly and the dead tissues shed more readily. Pus will be removed.

Wetterer has recommended hot chamomile fomentation. Bettmann had good results from syringing and fomentation with physiological saline solution.

## SECTION ON NEUROLOGY AND PSYCHIATRY

KEILTY, R. A.: *The Pathology of Syphilis of the Central Nervous System with a Digest of Serological Reactions.* *New York Medical Journal*, November 2, 1921, cxiv, No. 9, p. 497.

Syphilis of the central nervous system can be controlled, and almost eliminated, by a complete understanding of prophylaxis and by faithful treatment in the early stages. In the later stages, both neurologically and psychologically, it is an incurable disease because of the nature of the pathological changes. Syphilis is distinctly a productive disease building up the fixed tissue types of cells, increasing the fibrotic changes, increasing the character of the arterio-capillary walls, decreasing their permeability and interfering with the interchange between the chemical value of the blood and the metabolism of the parenchymatous cells. Syphilis, by reason of its productive changes, produces generative metamorphoses in smaller or larger groups of parenchymatous cells, which in the case of the central nervous system results in irreparable damage. Syphilis produces specific reactions in the nature of gummata which are not as important as its more diffuse changes, but which are destructive in nature. Serological reactions are to be taken as great aids but are not to be considered the sole reliance upon which a diagnosis may be based. The interpretation of the serological reactions from the blood and spinal fluid associated with the globulin reaction and cell count in cerebrospinal syphilis should not make the diagnosis but should be considered as a supporting link where clinical symptoms are vague; a confirmatory factor where clinical symptoms are clear cut, and a serious possibility where clinical symptoms are absolutely negative.

J. ROSE.



BONVICINO, L. A.: **Neurosyphilis in Its Various Aspects.** *Long Island Medical Journal*, October, 1921, xv, No. 10, p. 349.

"The different types of luetic infections of the nervous system are tabes dorsalis, amyotrophic tabes, cerebrospinal syphilis of which we have the inflammatory types such as: endarteritis of (a) the large vessel, (b) the small vessels, (c) the encephalitic form, and (d) the mixed form. The non-inflammatory types are (a) the acute, (b) the subacute, (c) the chronic, and (d) the gummatous, meningo-myelitis or meningo-encephalitis."

In tabes dorsalis we have meningo-bascular syphilis. It is mesoderm and affects the entire sensory part of the spinal cord and roots. It is extra- and intramedullary. The dura is, at times, involved. Arachnoiditis forms the primary lesion of tabes. It starts with hyperemia, thickening of the arachnoid, edema, infiltration of lymphocytes and plasma cells, destruction of nerve fibers and increase in connective tissue cells and fibers. According to Oberstein's theory it is a productive leptomeningitis. There may be endarteritis. Virchow-Robin spaces are infiltrated with the same blood element. The number of peripheral fibers gets smaller and of ganglion and Schwann cells more numerous. Sometimes the Nissl bodies or the tigroid substance is lost. Then cloudy swelling and cell sclerosis follow. It is primarily a root disease. The nerve roots of Nageotte are degenerated. In the intramedullary portion the columns of Goll and Burdach, the intra- and intersegmental fibers are destroyed, thereby the protosensory neuromechanism is affected. In amyotrophic tabes there is a degeneration of the anterior nerve fibers due to the degeneration of the anterior horn cells.

Cerebrospinal syphilis comes on from two to five years after the initial lesion. Other tertiary signs are present in the body at the same time. The encephalitic type is simply an arteriosclerosis with infiltration in the Virchow-Robin spaces, and destruction of brain tissues. This leads to paresis.

The history of a luetic infection in patients complaining of nervousness, insomnia or somnolence, loss of memory, the becoming careless, euphoria, disorientation, delusions, hallucinations, pathological reflexes, disturbance of vision or hearing, sensory or motor disturbance, emaciation, anemia, increase in weight, ataxia, mental or physical, gastric, laryngeal or cardiac crises, premature alopecia, a charcot

joint, mono-, para-, or hemiplegia, Hutchinson's teeth in the hereditary type, multiple sclerotic symptoms, anesthetics, parasthesias, hyperalgesias, symptoms of syringomyelia, aneurysms, nystagmus, strabismus, should lead to immediate treatment.

KERNEY, J. S.: **The Ocular Factor in Headache.** *New York Medical Journal*, November 16, 1921, cxiv, No. 10, p. 565.

Forty per cent of headaches are due to an ocular factor, while of all bilateral frontal headaches, 75 per cent are due to eyestrain. Headaches due to eyestrain are bilateral; the hemicranias are not commonly due to eyestrain. As to site, a frontal or supraorbital headache indicates a hyperopic error; occipital, an imbalance of the extrinsic ocular muscles; and temporal, an astigmatic error. When headaches occur in more than one locality, a combination of refraction error is suggested. The character of headaches due to eyestrain is usually dull, sometimes boring on excessive use of the eyes, seldom knifelike. Toward the end of the day it is severest in patients who use the eyes continually, especially for close work; it differs from headaches due to diseased conditions of the nose and its accessory sinuses. These are worse on arising and lessen as the day advances.

When the eye musculature is weakened through constitutional disturbances that tend to lower vitality, the same use of the eyes, which when in health, produce no untoward symptoms, at this time is attended by the reflex headaches of eyestrain, and when there is found an error of refraction or extrinsic muscular imbalance, relief is usually experienced when they are corrected.

Abnormalities in the shape of the globe are usually hereditary. Imbalance of vertical extrinsic muscles give more pronounced headaches than imbalance of other muscles. A lateral imbalance up to six prism diopters may not give symptoms, but an error as low as one prism diopter of vertical imbalance is often responsible for many complaints. Headaches due to glaucoma, iritis, keratitis, conjunctivitis and other diseases that attack the eye structures and adnexa are readily recognized as presumably causative by the affection when found.

Hemicrania is usually a symptom when intraocular tension (glaucoma) is present, and an ophthalmoscopic examination of the



fundus of the eye in all migraine subjects should never be neglected, because it reveals occasionally a cupping of the optic disc, the result of tension, even when there is no external evidence of this disease.

An ophthalmoscopic examination of the eyes is imperative in every patient who complains of headaches that are persistent and uncontrollable. This often discloses changes in the structures that suggest anemias, arteriosclerosis, toxemias and other dyscrasias.

J. ROSE.

**HARBOROW, G. J.: The Endocrines and Their Influence on Teeth.**

*British Dental Journal*, October 1, 1921, xlii, No. 19, p. 910.

It is difficult to associate a special gland with tooth development. But internal secretion plays a part in tooth development, yet we must not jump to conclusions and make statements which cannot be substantiated by statistics.

Timme states that teeth are usually delayed in their appearance in certain cases, especially in girls who are underdeveloped. These same teeth show certain characteristics, especially the lateral incisors and canines, which are either undeveloped or else take on a flat appearance like incisors, using their fang-like appearance.

Gies, writing in the *Dental Cosmos*, points out that parathyroidectomy without disturbance of the thyroid "invariably produces deficient calcification, but no difference in the general condition or dimensions of teeth", "suggesting that dental calcification is balanced by the excessive calcium output of one counteracted by the deficient output of the other."

Helman points to the mouth, teeth, and jaw of cretins, but I cannot see that here there is any diagnostic sign, and by no means a constant one. He says: 'The tooth formation is faulty, and there is malposed irregular dental arches, supernumerary teeth, missing dental germs, and late retention of deciduous teeth'. Thymectomy (in dogs 'results in small skulls, underdeveloped jaws, delayed, small teeth and delayed exfoliation').

"In hypophysectomized dogs 'the deciduous dentition persists to the end of a year or throughout life. Acromegaly, on the other hand, causes overgrowth of the mandible, large dental arches and teeth often in proportion. Castration has a somewhat similar effect. This

shows rather the dependence of a gland upon the others in the endocrine chain. The sexual glands, pituitary and thyroid working in close partnership, extirpation of any one would tend to exaggerate or lessen the functions of the others.

"Eransquin reports experiments on dogs by 'the removal of the hypophysis. There was a reduced volume of skull and corresponding reduction in size of teeth; in the tooth form there was no change in the coronal portions, but retarded calcification in the roots and partial persistence of deciduous teeth. The histological structure was normal'."

"Bandler suggests the following observations in diagnosing endocrine activity. 'A good firm lower jaw suggests the gland that produces acromegaly—as does wide spacing of the teeth.

"Regular teeth imply balance between the anterior and posterior pituitary.

"High arch and crowded teeth suggest over-activity of the posterior pituitary.

"Yellowish color of teeth calls attention to the adrenal cortex.

"Teeth crowded together, with a high arch means relatively more posterior than anterior pituitary.

"Absent, abnormal or small lateral incisors speak for abnormal or poorly developed gonads and internal genitalia.

"Thyroidal teeth are firm, white, with good enamel—often transparent, with a suggestion of bluish tint.

"In anomalies of the thymus, and of the thyroid, and of the parathyroids, because of the calcium disturbances, there is poor enamel and there may be lateral erosions of the enamel."

"Adrenal teeth are often dark with a tinge of yellow or green.

"Long, pointed canines indicate a fighter or 'scrapper' and are to be referred to the adrenals. Short, small canines suggest the opposite.

"Wisdom teeth in their character, eruption and date of eruption are probably related to the anterior pituitary.

"Receding gums, pyorrhea, long teeth, suggest posterior pituitary activity.

"The manifestations of tetany are the result of an insufficiency of the parathyroid glands (Falta).

"The hair, the nails, the skin, the enamel are trophically disturbed.



" 'There is hypoplasia of enamel causing the formation of horizontally transverse ridges. The incisor teeth are the most sensitive, showing opaque spots on the anterior surface.'

"In myxedema, which is caused by diminished function of the thyroid, he states: 'Trophic disturbances affect especially ectoderm, skin, hair, nails and teeth and the vascular system.' "

**KOUMDJY, P. Pseudotabetics and Their Re-educational Treatment.**

*New York Medical Journal*, September, 21, 1921, cxiv, No. 6, p. 317.

It is simple to mistake a pseudotabetic for a genuine case of tabes, for the symptomatology is frequently very similar. One finds incoördination of movement of the lower limbs and ataxia of the upper, Romberg's sign, absence of patellar and Achilles tendon reflexes, anesthesia, analgesia, delayed transmission of impulses, lightning pains, gastric crises, visceral crises, amblyopia, muscular pains, and, occasionally, a disturbance of the reaction of the pupil. These symptoms may be either isolated or in groups of two, three or several signs together, and thus suggest the presence of a true locomotor ataxia of Duchenne.

Pseudotabetics are characterized by their tendency to complete cure, by tenderness on pressure of muscles, and by the absence of the Argyll-Robertson pupil. Further, they can be distinguished by the different topographical distribution of anesthetics, "which here diminish from the distal end towards the root of a limb, whereas in tabes they always show a radicular distribution" (Déjerine and Thomas).

The dominating obsession is the morbid fear of walking. Basiphobia is the psychic element characteristic of pseudotabetics; also agarophobia and stasiphobia.

The sensory disturbances are situated distinctly at the periphery and diminish steadily as the root of the limb is reached.

Pseudotabetics are differentiated from true tabetics by the evolution of the symptoms, the rapidity of their development, and their usual curability. Relapses may occur and the same manifestations recur, but in the end a definite and complete cure is effected.

Among the etiological causes of pseudotabes are intoxications, such as alcohol, lead, copper, arsenic, nicotine, carbon bisulphid,

ergot, and diabetes; infections, such as diphtheria, smallpox, scarlatina, syphilis, and dysentery; hysteria, neurasthenia, overwork, and exposure.

The therapy is divided into two groups; the first aims at removing all causes of intoxication, infection, or overstrain. The second group comprises all external measures which act on the symptomatology of the affection and on the psychic condition of the patient, that is psychotherapy and all agents of physiotherapy; isolation, direct and indirect suggestion, hydrotherapy, electrotherapy, radiotherapy, thalassotherapy, crenotherapy, and exercises.

(1) Pseudotabes is not rare. (2) Pseudotabes may have a syphilitic origin. (3) The symptoms recall those of true tabes dorsalis. They are distinguished by the intensity of their manifestations and by their complete disappearance ultimately. (4) Pseudotabetics are cured completely in all instances. (5) Pseudotabes is distinguished from tabes dorsalis by the evolution of the symptoms, by their rapid development, and by their customary curability. (6) The treatment is that of the etiological cause and also symptomatic treatment.

J. ROSE.

NEFF, J. M.: **Adiposis Dolorosa.** *Illinois Medical Journal*, September, 1921, xl, 169-178.

Cases of adiposis dolorosa are probably much more common than is generally supposed, and undoubtedly many of the lepomata which are removed, because of tenderness on pressure, are cases of Dercum's disease. Mingazzini in an article on the subject, published in 1919, stated that up to that time about 100 cases were on record.

The cardinal symptoms of the disease are: (1) fatty deposits; (2) sensitiveness of these deposits to pressure; (3) pain in the fatty masses; (4) general asthenia; (5) psychic or neurotic phenomena. The earlier and simpler classification of the fatty deposits is (a) nodular; (b) circumscribed diffuse; and (c) generalized diffuse. The circumscribed diffuse is the most common, the generalized diffuse next in frequency, while the nodular is quite rare. The most common psychic phenomena observed are: depression, melancholia, impairment of memory, hysteria, irritability of temper and mental



confusion. The most common minor symptoms are; parestheses, "numbness" of different parts, tingling, etc, diminished or abolished tendon reflexes, vasomotor phenomena; trophic changes; myxedema; secondary anemia; changes in the bones and joints.

In some cases there is a family tendency to obesity, or a family history of adiposis dolorosa itself. There may be a neuropathic heredity or a previous personal neuropathic history. The disease is more common in women than in men, at least in the ratio of 6 to 1. The age of patients may range from 11 to 78 years; most of the cases, however, occur between the ages of 35 and 50 years, especially in middle-aged women who have just passed the menopause.

Alcoholism, syphilis and tuberculosis are occasional etiological factors, all probably acting in the same way by their toxic effects on the ductless glands. Trauma has preceded the onset of the disease in a considerable number of recorded cases. Operations on the sexual organs seemed to stand in some relation to the disease. Kraft mentions as causative factors, some of the acute infective diseases such as rheumatism and typhoid. Just what part the thyroid plays in the disease is not absolutely certain, but the evidence goes to show that it is probably an alteration in its secretion. The pituitary gland is often found affected in cases of adiposis dolorosa. Examination of the fatty deposits shows that the fat may be normal both macroscopically and microscopically, or it may be myxedematous, permanently or intermittently.

Dereum noted in one case extensive interstitial neuritis of the peripheral nerves in the fatty deposits without changes in the larger nerve trunks. Changes in the nervous system are rare and when present are probably coincidental or dependent upon changes in the ductless glands, especially the hypophysis, which is so often involved.

Many of the writers on the subject believe that some alteration in the sympathetic system plays an important rôle in the etiology and pathology of the disease, and this is probably so in its relation to the internal secretion. There may be a bluish discoloration over the fatty nodules and a variation in the size of the masses and the pain in them, due to dilatation or contraction of the blood and lymph vessels.

Pathological changes in the genital organs, usually atrophy of the ovaries or testicles, have been described in many cases. The hemoglands are thought by some to be significant. The practical points

in the pathogenesis are the following: (1) a demonstrable lesion of the thyroid gland; (2) a demonstrable lesion of the hypophysis cerebri; (3) often disease of the ovaries and testicles. The course of the disease is exceedingly chronic and tends to be progressive. Persons affected, however, rarely die of the disease.

Treatment of adiposis dolorosa is most unsatisfactory in the majority of patients. It should combine medical and surgical measures: (a) reduction of the weight of the patient by the ordinary anti-obesity diet; (b) systematic exercises at least twice a day, horseback riding, bicycle riding, golf are all of value; (c) large doses of saline cathartics every 3 or 4 days; (d) hot baths once or twice each day, preferably after the morning exercises; (e) general massage is recommended by many; (f) administration of thyroid extract or some other thyroid derivative. Other internal medication includes anti-specific treatment. Price says that potassium iodid should be given whenever there is a definite specific history. Outside of this, drugs are given mainly with the view of controlling pain, relieving constipation or correcting some intestinal intoxication. Local measures are useless, although many have used massage, compression, electricity phototherapy and x-rays. The surgical treatment is considered under two headings; removal of the fatty deposits and partial thyroidectomy. Three cases are reported, one of which was a woman of 57 years. This patient fell and struck the left costal arch five years ago. About six months later she began to have pain in the left upper abdomen. Four years ago she noticed a lump to the left of the umbilicus. This lump is tender to pressure, sometimes extremely so. She is of a very "nervous" temperament, is restless, despondent and often has insomnia. For the past six months she has noticed a small tender lump on the inner side of the left arm, and a short time ago noticed a fullness in the left axilla, which was tender to pressure. She has complained of pain and swelling in the points of the hands for the past two or three years, also in the metatarsophalangeal joint of great toe. For several years she has complained of what she calls "neuritis" in the right shoulder. First noticed an enlargement of the left lobe of the thyroid 30 years ago. Grew larger slowly for 20 years and has been the same size ever since. Menopause 10 years ago—no trouble then. The patient is now receiving thyroid extract in five-grain doses t. i. d. with marked improvement.



**ZLOCZOWER, A.: Neurosyphilis Caused by Intensive Wear. Neurorelapse Affecting the Cauda Equina** (Neurorezidiv der Cauda equina). *Med. Klinik*, 1921, xvii, 345.

Many physicians have seen lesions of the nervous system arising in treating the first stage of syphilis. The enemies of salvarsan treatment have said that these nerve involvements are the consequence of the medication. The author thinks that they are wrong. Benario, and others, have reported cases of paralysis of the facial and the acutic nerves, in mercurial treatment. The nervous symptoms arise sooner and the more intensely syphilis is treated. A swelling of certain parts occurs in the course of treatment where spirochaetes have been killed. In the brain and its exits, there is a great restriction of space and the swelling will cause compression and motor and sensory disturbances.

The author's patient showed incontinence of the bladder and the rectum, sensory disturbance of the same regions, decrease of potency, blood Wassermann negative, spinal fluid Wassermann negative, Phase I positive, slight lymphocytosis, no increase of lumbar pressure. The positive reaction of the lumbar fluid suggests a meningeal irritation. The sphincter paralysis discredits psychic involvement. In neural involvement of the cerebrum, the affected part is always extracerebral. In this case there was a lesion of the cauda-equina, which was due to meningeal syphilis. The patient is in danger of developing tabes at a later stage, for the experience has been that meningeal irritation of the lumbar and sacral marrow in the early stages of syphilis predisposed to tabes.

**WEIGELDT, W.: Early Neurosyphilis** (Ueber fruhluetische Erkrankungen des Zentralnervensystems). *Deutsche Medizinische Wochenschrift*, September, 1921, xlvii, 1018.

The idea that during the early stage of syphilis, the skin and mucous membranes only are involved, is much adhered to. This opinion is traceable to Fournier and Heubner's teaching that there is an antagonism between luetic disease of the skin and that of the internal organs including the nervous system.

A few days previous to the skin symptoms the entire organism is

invaded by spirochaetes. It is probable that the internal organs, even at this stage, undergo changes which are not demonstrable by present-day clinical methods. The fact of the nervous system being involved during the early stage of syphilis was clearly shown by the lumbar puncture of Quinke and the studies on spinal fluid by Nonne, Kafka, and others, and by the excited discussion on the so-called neuro-relapse, which was first attributed to salvarsan. Nervous involvement has been shown to occur in 20 to 40 per cent in early syphilis. Spirochaetes reach the central nervous system at the time of the eruption. Violent exanthema and ulcers seem to make the later occurrence of neurosyphilis less probable. Blocking of the blood-vessels and softening will occur at an early stage. The meningeal lesions which are combined with disease of the blood-vessels usually is found at the cerebral base, more especially in the region of the chiasma-pons, but it may also occur on the convex surface of the cerebellum and in the spinal cord. Early neurosyphilis will usually occur within the first year. Fahr reports a case which occurred nine weeks after the infection. There was a convexity meningitis and encephalitis found at autopsy, although the patient had never taken salvarsan.

In primary syphilis there are scarcely any objective nervous symptoms, and specific spinal fluid changes are rare. In early syphilis the spinal fluid is much more often demonstrably pathological (50 to 70 per cent). The highest percentage is found in leukoderma and alopecia specifica. There may be pathological spinal fluid without marked nervous symptoms and vice versa. In most cases spinal fluid may become normal later on. Only in about 10 per cent the changes will remain for a longer time. About 2 per cent will get cerebrospinal syphilis, 3 per cent tabes, and 5 per cent paralysis. The attempt to judge in the early stage of subsequent nervous involvement by the spinal fluid findings has failed.

The author is of the opinion that immuned therapy should again be given a trial as salvarsan has shown many defects.

Luz, F.: **Spheno-orbital Meningocele in Child** (Meningocele Espheno-Orbitaria). *Brazil-Medico*, 1921, xxxv, 17.

The author publishes a rare case of congenital tumor, located on the side of the face of a child two years old. The child was born at



term. Soon after birth, traces of the tumor were seen between the angle of the mouth, the nose, and the orbit. Very soon it began to grow rapidly. A physician tried to diminish its size by an incision. Large quantities of water-clear liquid were reported to have been evacuated. A small scar of the minute puncture remained, and the tumor again formed. In time, the deformation of the mouth became bothersome in feeding. Dentition was normal. The tumor was located under the skin and was movable, and of the size of a large orange. It was spherical, and had a globulated surface. It was hard, translucent, and looked like a hydrocele.

It was fluctuating and pulsating. The tumor protruded from the stenoian canal. There was no inflammation. The chemical examination of an exploratory puncture showed albumin, chlorates, phosphate, some mucus which contained sugar; the microscope, some cellular elements.

An incision was made at the highest part of the tumor near the lower border of the orbit. The tumor sac was dissected out. Part of the sac extended beneath the orbital cavity. The tumor proved to be a meningocele, which was attached to the sphenoidal sinus. The eye-ball was atrophied. The child, after the operation, developed a temperature, and convulsions, and died from meningitis. At autopsy it was found that the meningeal sac was attached to the optic nerve, which ended in the mass of the atrophied eye-ball. The orbit was entirely deformed, and the sphenoidal sinus much distended. Macroscopically, cerebrum, cerebellum, and medulla were normal.

Virchow says that hydrancephalocoele is situated in the median line, resembling spina bifida. Usually it is situated at the occiput, at the spinous processes of the occipital vertebrae. He says that hydrancephalocoele of the occiput is often met with, combined with spina bifida of the atlas and cervical region. In the cases of these tumors near the nose or on the forehead are much rarer. Hydrancephalocoele, situated laterally, is even more rare. Fontanelles are more often the site of their growth. These tumors are not hernia of the brain for the nervous substance, which they include, does not contain any cerebral substance. It is a congenital tumor, and encephaloma, which consists of a sac, a pouch containing liquid and nervous substance. It has no definite structure, which would refer to the encephalon. This tumor is attached to the dura mater on a peduncle, and passes out of the skull. This structure shows it is congenital.

GORDON, A.: **The Oculo-cardiac Reflex and Its Therapeutic Value.**  
*The Therapeutic Gazette*, September, 1921, xlv, No. 9, p. 621.

This reflex was referred to by Aschner (*Wiener Klin. Wchnschr.*, 1908, p. 1520). It varies greatly in normal and pathological states. In the majority of normal cases there is a retardation or slowing up of the pulse, within 5 or 12 beats per minute. It is produced by compression of the eyeballs during one-quarter or a half of a minute. In certain cases other symptoms are noted, as headache, vertigo, noises in the head, sensation of heat or cold. It is obtained by index finger compression of the eyeballs, compressing or pushing the eyeballs into the orbits. It is best obtained by placing the individual in a prone position, the head well rested and eyes being closed.

When the right eye only is compressed the bradycardia is more marked than when the left eye only is compressed. Binocular compression gives about the same results as right eye compression. In very exceptional cases, instead of bradycardia, an increase of the cardiac rhythm is observed.

The reflex pathway is probably from the eye through the branches of the fifth nerve to the medulla, from there it reaches the moderators or accelerators of the heart, resulting according to which is stimulated, in bradycardia, or tachycardia.

The test was made in hemiplegia, epilepsy, paralysis agitans, Graves' disease, multiple sclerosis, tabes and paresis. In 27 cases of epilepsy, the reflex was increased; instead of from 5 to 12 pulsations per minute, there was a dropping of 12 to 30, more in females than in males. It was always constant in the same individual during repeated examinations.

In 19 cases of tabes, reflex was absent in 13, much diminished in 6 cases. In cases with abolished reflex, the Argyll-Robertson pupil was present. In three cases with diminution of pulsations, the Argyll-Robertson was absent, later the oculo-cardiac reflex disappeared, and then the Argyll-Robertson pupil was present. Thus it adds a valuable sign to the group of signs well-known, leading to a proper recognition of the disease in its early phases. The abolition of this reflex indicates an ascending tabetic process, with affected bulbar sensory roots.

In 5 cases of paresis, reflex produced a diminution of the number of pulsations from 30 to 42. This indicated disturbance along the



pathway of the arc reflex from the trigeminus to the medulla, or from the medulla along the pneumogastric or sympathetic nerve, or else from the medulla itself.

In ten cases of paralysis agitans, in eight of which the condition was bilateral, it was normal in two without tremor. Though totally absent in 6 of the bilateral cases in which bilateral tremor was present. It was diminished in two unilateral cases, more feeble-minded when the test was made on the affected side than on the opposite side. It seems that the chief localization in this disorder is in the bulbo-pontine. A lesion, therefore, in the pons in the vicinity of the nucleus of the fifth nerve is in the center of the oculo-cardiac reflex. In the unilateral cases it was found that the latter reflex was more altered on the affected side than on the other, and also that the ocular compression increased the tremor on the same side. It seems, therefore, that this reflex center is very close to the lesions producing tremor.

In 7 cases of exophthalmic goiter, 5 showed a decrease of 15 to 38; 1 without exophthalmus, a decrease of only 5; in the other remaining reflex was absent.

In Graves' disease we find the pneumo-gastric and sympathetic nerves show a hyperexcitability. But in the cases where the reaction is absent, adrenalin was given, which produced tachycardia. Further, in a third series of cases we find that there is a combination of both groups of phenomena in the same case, showing a form of Graves' disease, both of the vagotonic and sympathico-tonic type of disorder.

In 3 cases of multiple sclerosis the reflex was absent in two, present in one, but without any alteration. In the first two cases there was probably sclerosis in the medullary center of the reflex arc, and in the third case in the centripetal or centrifugal portions of the arc.

Twelve cases of hemiplegia were examined; 8 showed absent reflex on the paralyzed side, normal on the normal; 2 cases showed abolishment; in two mild cases it was normal. These findings show that in the diagnosis of the unilateral lesion, there will be a differentiation of an organic from a functional disorder.

In anxiety neurosis with tachycardia, paroxysmal, 5 cases were tested. It was found that the attacks of cardiac palpitation could be relieved with index finger of compression of both eyes during a half minute. In each of the 5 cases there was no organic lesion of the

heart. The same thing was noted in severe cases of hysteria. Also in one case of hiccough and 2 cases of persistent sneezing.

The oculo-cardiac reflex has an important diagnostic value in a number of instances, especially in a recognition of a serious malady in its early phases, when other symptoms are absent.

NORMAN, N. P., AND JOHNSON, H. M.: **Neuralgias of the Superior and Inferior Maxillary Branches of the Fifth Nerve Caused by Dental Pulp Nodules.** *New York Medical Journal*, July 20, 1921, cxiv, No. 2, p. 88.

Diagnostic technic should be exhausted in an attempt to find out the cause or causes of the pain, and also discover any associated conditions that may be an instigator of the trouble. Even though we are fortunate enough to find and remove the cause, in neuralgias of the fifth nerve we may suffer disappointment. This nerve has greater tendency in neuralgic involvement than any other nerve in the body, since they are subject to its various branches to a multiplicity of irritations. Oppenheim even cites a case of multiple sclerosis beginning as a facial neuralgia.

Neuralgias of the fifth nerve have also been reported and designated as psychalgias; they are amenable to suggestion therapy and psychoanalytical investigation. We should properly evaluate the hysterical or neurosthenic makeup, and not be guilty of extracting teeth or injecting alcohol or extirpating the ganglia in cases of psychical etiology.

For a number of years pulp nodules have been known to be the exciting factor of some cases of neuralgia for the superior and inferior maxillary divisions of the fifth nerve. These nodules appear in apparently sound and healthy teeth. This present in decaying teeth are comparatively easy to detect. Their formation in healthy teeth causes death of that tissue. They are found most often in the bulb portion of the pulp, but may occur in the root portion.

These nodules are usually found in teeth of persons past middle life, but occasionally occur in youth.

The symptoms are the result of mechanical irritation to the terminal nerve filament within the pulp tissue. The local symptoms not limited to the particular tooth affected, but affecting the pulp



of all the teeth on that side of the dentures. Diagnosis of pulp nodules is made only by means of careful x-ray procedures.

*Treatment.*—Having determined the defective tooth or teeth, devitalization of the pulps affected is the only treatment after the local and constitutional troubles have been corrected. We cannot expect to have the pain disappear immediately, as such conditions do not disappear until sometime after the local agent is removed.

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## SECTION ON GENERAL MEDICINE

BROWNING, C. H., AND GULBRANSEN, R.: **The Antiseptic Potency of Acriflavine with Considerations on the Variability of Results in Testing Antiseptics.** *British Journal of Experimental Pathology*, April, 1921, ii, No. 2, p. 95.

Authors conclude that sterilizing concentrations of acriflavine, in heated ox serum (56° C. [132.80° F.]) for *bacillus coli* and *staphylococcus aureus* are respectively 1 to 100,000 and 1 to 200,000; these modal values were obtained in an extensive series of tests. Sterilizing concentrations in dilute peptone water with a reaction of PH 7.2 to 7.8, are found to be 1 to 20,000 for *bacillus coli*, 1 to 200,000 for *staphylococcus aureus*. The sterilizing concentration of the antiseptic is within wide limits independent of the size of the inoculum.

Commercial specimens of acriflavine were alike in their antiseptic power, but certain specimens were more irritating to the conjunctiva than others, an important point in treating an infection of a delicate membrane like the urethra.

Occurrence of variations in the sterilizing dose in repeated tests was noted but due to such factors which at present cannot be defined.

Rapid exhaustion or deterioration of antiseptic in the medium does not occur; tested by adding antiseptic to medium after growth of organisms (*bacillus coli*) had occurred, resembling in this way more closely the conditions met with in treating an infected wound. A heavy growth of organisms is sterilized as easily as though they



were placed in the medium at the same time as the sterilizing solution.

Irregularity in action of different concentrations of drug, in same series, is explained that where lethal action is slowly produced, there is a critical concentration in the vicinity of which the balance may be inclined in favor of the organism or the antiseptic, by factors not now recognizable.

DUPUY, H.: Tracheobronchial Diphtheria. *Southern Medical Journal*, April, 1922, xv, No. 4, p. 321.

*Type*.—Lynah has proven through a series of bronchoscopic examinations in 38 cases that we have ascending diphtheria, forming in the smaller bronchi and extending upward in the trachea, and vice versa. In either case the larynx and oropharynx are not involved. It occurs more frequently in children. The author suggests that in the wake of measles it may be mistaken for bronchopneumonia.

*Symptoms*.—The onset is insidious, giving picture of "cold" with croupy coughing and intermittent stridor, low temperautre, persistent and progressive dyspnea, asthmatic respiration. Gradually the dyspnea reaches great intensity, the lips and finger tips become cyanosed and there is marked suprasternal and diaphragmatic retraction with distressful breathing. There is no aphonia; the voice is practically normal. It is slow of evolution.

*Diagnosis*.—Physical signs indicate a one-sided bronchial obstruction with diminished respiratory sounds. On the other side, the lung becomes hyperactive with increased respiratory sounds. There is emphysematous condition on the obstructed side with hyperresonance. There is a distinct tendency to "barrel chest", especially in children. The "flip-flop" sound may be heard by auscultation. Through the bronchoscope and tracheal wound cultures should give positive information. Care should be exercised in differentiating tracheobronchial diphtheria from foreign bodies and bronchopneumonia (the latter especially in children).

*Treatment*.—Serum therapy is justified on mere suspicion because of the difficulty in early diagnosis. Intubation is generally contraindicated. Tracheotomy and upper bronchoscopy give openings of unquestionable value for removing membranous casts. Serum

is best given intravenously in large doses, 20,000 units as an initial dose; this should be followed in six hours by another such dose and its use should be continued as indicated.

SCHWENSEN, C.: **The Heart Rhythm in Diphtheria.** *The Journal of Infectious Diseases*, March, 1922, xxx, No. 3, p. 279.

This is a rather extensive report accompanied by tracings and case reports. Five hundred and sixty-eight patients with diphtheria have been examined for symptoms of cardiac impairment; 118 of them who suffered from grave diphtheria have been especially examined. Furthermore, 8 cases that were fatal in the acute stage, have been followed thoroughly. Clinical signs of acute myocarditis were found in 17 per cent of the 568 cases and 75 per cent of the cases of grave diphtheria. Typical symptoms of myocarditis were present in all fatal cases in the acute stage.

During the course of the diphtheria two distinctly different types of disturbance of the rhythm appeared. (a) An "early" type which on an average appeared on the eighth day of illness. It started as organic heart block; in the course of from a few hours to a few days the rhythm, as a rule, became very complex and varying, but still it formed a distinct, easily recognizable type (flutter?). This disturbance explains the pallor, the coolness of the skin and the frequent attacks of syncope. All these patients died of heart failure in the acute stage of the diphtheria. (b) A "late" type which consisted of extrasystoles appearing on an average on the thirty-third day of illness.

Among the 563 cases that survived the acute stage extrasystoles were found in 14 per cent; and in 61 per cent of the grave cases. Of the patients with symptoms of myocarditis 81 per cent had extrasystoles during convalescence. None of these patients died of heart failure.

In four cases of Type (A) histologic examinations of the arterio-ventricular node and bundle showed that this system was attacked in the same degree as the myocardium surrounding it.

Electrocardiograms taken during the fifth week of illness were normal in 31 cases with muscular mitral insufficiency and extrasystoles. These last were found in only 3 cases; two patients had extrasystoles of auricular origin while the extrasystole in the third case arose from the junctional tissues.



On reexamining the patients at least two years after their discharge signs of impairment of the heart were found in more than two-thirds of those who came to be reexamined. In some cases in which reexamination showed pronounced impairment, there had been during the stay at the hospital only doubtful signs of myocarditis. The diphtheria must, therefore, be considered an important cause of heart failure later in life.

M. M. BANOWITCH.

RICH, C. O'N.: **Fat Embolism.** *Nebraska State Medical Journal* 1922, vii, 14.

Case: boy, 19 years; fracture of left humerus, surgical neck of right humerus and middle third of left femur, temperature, 101° F., pulse, 124, respiration 33, fully conscious, following day, temperature 103° F. (59.44° C.), pulse 136, respiration 28 and irregular, pulse full and bounding, stuporous, restless, and pain. Urine positive for fat. Blood; 90 per cent hemoglobin; red blood count 5,000,000; leukocytes 12,500; polymorphonuclears 84 per cent; lymphocytes 15 per cent. Following day fever was higher, cyanotic, poor pulse, and weaker. Urine showed a visible amount of fat, fully a half rising to upper part of test tube,  $\frac{3}{4}$  full of urine. Died the following day. Autopsy was refused. "Based on symptoms physical findings and marked lipuria, diagnosis of pulmonary fat embolism was made."

This condition was first mentioned in 1669. In 1827, Magendie injected olive oil into veins of dogs and discovered that liquid fat would not pass through the smaller vessels, producing a mechanical block, which he attributed to increased viscosity of the blood, he described the symptoms, portraying the pathological changes in the lungs and noted presence of oil in blood-vessels and alveoli of the lungs.

"Fat is demonstrable in the urine for 2 or 3 days following most fractures of long bones, but is not the case in short bones." Symptoms do not result in all cases, the formation depends upon the amount and distribution of the fat. With a large amount, in the circulation, the more likely are important regions to become overwhelmed.

The symptoms are similar to those of shock. Two theories as to cause have been advanced to prove that fat embolism may be the cause of shock; Porter (*Boston Med. and Surg. Jour.*, 1917, p. 176) says fat injected intravenously or gaining access to the venous circulation after fractures or lacerations of the subcutaneous tissues, passes through the pulmonary vessels, but lodges in the peripheral systemic vessels and thereby produces circulatory failure by some mechanism, not yet fully explained.

Whartin distinguishes two types of fat embolism, clinically, namely pulmonary and cerebral. He states the symptoms of the pulmonary are less characteristic and more difficult of diagnosis. "Dyspnoea, cough, hemorrhage, cyanosis and symptoms of pulmonary edema. In the so-called apoplectiform cases, these symptoms may develop immediately after the injury or may be delayed. Diagnosis is extremely difficult and frequently is not made until the autopsy findings reveal it. There may be an initial free interval before the respiratory symptoms appear, restlessness, headache and stupor may be the first symptoms or a respiratory difficulty may suddenly develop and the patient suffer from air hunger. Heart beats are more frequent, irregular, and tension low. Precordial or epigastric pain may be felt. Right heart may be dilated. More frequently the temperature is low at first and rises gradually after a few hours. Respiratory rhythm may be irregular. Resonance is slightly diminished and becomes somewhat tympanic in character. Moist râles are heard over the base. Free fat can be demonstrated in the urine."

The symptoms may resemble those of shock, in fact differentiation at times is impossible clinically. In the cerebral form there is great restlessness, muscular twitching, convulsion and finally paralysis. Nearly all cases show marked dyspnoea. Some cases recover spontaneously. Others are considered to be in a condition of delirium tremens or to be suffering from an embolus of septic type.

"Dennis' rule for fat embolism, as a means of differentiation is, shock 3 hours, fat embolism 3 days, pulmonary embolism, 3 weeks."

Because it is difficult of diagnosis, every precaution should be taken to prevent it. It is recommended by Burger, that an immediate application of an Esmarch bandage will prevent further distribution of fat already broken up, by the blood vessels and lymphatics. Care should be exercised in the manipulation and transportation of all fracture cases."



"Wilms, quoted by DaCosta, treated one case successfully by making a fistula in the thoracic duct. Great care should be exercised in making an incision through adipose tissue, to avoid any unnecessary traumatism and injury to the parts, and, in handling such wounds, it is almost essential to obtain complete haemostasis. My own practice in closing wounds which have involved any considerable amount of adipose tissue is to place a provisional drain of rubber tissue in the angles of the wound, removing it after 48 hours. Patients with this condition should have parts at absolute rest; if an external wound exists, it should be incised and free drainage established, stimulants administered, the use of external heat and inhalation of oxygen. We can accomplish much by treatment."

STADIE, W. C.: The Treatment of Anoxemia in Pneumonia in an Oxygen Chamber. *The Journal of Experimental Medicine*, March, 1922, xxxv, No. 3, p. 337.

Stadie reviews the rationale of the use of oxygen in the treatment of the anoxemia of pneumonia. He defines anoxemia as that condition in which the hemoglobin of the blood is less saturated with oxygen than normally.

Since anoxemia is a frequent and often a pronounced symptom of pneumonia, a study of the effects of oxygen upon this type of anoxemia and upon the course of the pneumonia was begun and is here reported. The use of the oxygen chamber (described in *Jour. Exper. Med.*, March, 1922, xxxv, 323) made it possible to administer the gas over long periods of time under exactly the definitely known conditions.

Eight cases from the pneumonia service of the Hospital of the Rockefeller Institute were selected. The criterion for selection was the extent of the anoxemia as measured by the arterial unsaturation. When a case developed anoxemia of sufficient degree, usually 20 per cent or more of arterial unsaturation, oxygen treatment was commenced. The cases were followed by repeated determinations of the arterial unsaturation. When it was not feasible to do arterial punctures, estimates were made according to the degree of cyanosis. Cyanosis was found to be a regular accompaniment of anoxemia and to vary directly with it.

Five of these 8 patients, in all of whom the prognosis was grave, recovered. Three patients, one of tuberculosis, one with a pneumococcus Type III infection, and a third with a pneumonia superimposed upon a chronic pulmonary condition, in spite of the treatment given, died.

In all cases there appeared to be some improvement in the patient's condition. The anoxemia almost immediately cleared up and the cyanosis disappeared with it. Prolonged inhalation of from 40 to 60 per cent of oxygen appeared to be harmless. One case in particular gave a convincing demonstration of the beneficial action of oxygen in anoxemia. The patient, obviously dying, was pulseless; the heart rate was 160 to 170; there was deep cyanosis; the extremities were cold, her respirations gasping, and she was comatose. The lungs were filled everywhere with coarse, bubbling râles. Within a short time after the oxygen treatment was begun, the radial pulse had returned and was strong, rate 120, respirations were quieter, and she was mentally alert. The fact that this patient finally died all the more demonstrates the value of oxygen for the immediate relief of these distressing symptoms.

A study of the lung signs in the eight cases reported showed that anoxemia is proportional to the extent of the respiratory surface involved. As a rule, when the pneumonic process is confined to one area, as in the typical lobar pneumonia variety, there is little or no cyanosis. When however there is a spread of the pneumonic process with secondary areas of bronchopneumonia present, anoxemia without fail results.

H. M. FEINBLATT.

LLEWELLYN, J. L.: **Etiology of Gout.** *Lancet*, March 11, 1922, ccii, No. 5141, p. 475.

Various English observers have found heredity to play a part in the causation of gout in from 75 to 81 per cent of the cases. The author is of the opinion that probably 100 per cent are on such a basis. He defines gout as an hereditary sensitization to nucleoproteins or proteins. Gout is often associated with other anaphylactic manifestations as urticaria, eczema, asthma. It is also periodic and paroxysmal. In the aberrant or abarticular gout, the attack may al-



ternate with asthma or urticaria. The gouty subject displays a notorious idiosyncrasy to certain food substances, such as fish, beef, berries. The effect of alcohol, the author attributes to the protein sensitization from the malt or barley—protein used in the fermentation.

Serum sickness as evidenced by urticaria, asthma and swelling of the joints may be similar to a gouty manifestation.

The anaphylactic substance acts on the endothelium of blood-vessels in gout and produces tissue changes in which urates are later deposited. Uric acid is not the cause of gout but the result of it.

The author advises cutaneous protein tests for the determination of the sensitizing agent.

H. JOACHIM.

JOSLIN, J. P.: *The Treatment of Diabetes by the General Practitioner.* *Pennsylvania Medical Journal*, 1922, xxv, 373.

In a thoroughly covered and practical article, he emphasizes the following:

*Treatment of Diabetic Acidosis.*—(1) Rest in bed. (2) Special nursing. (3) The ingestion of one-half pint, if possible, of some simple liquid every hour, usually hot, given cautiously so as not to upset the stomach, as hot water, coffee or broths. When the stomach refuses liquids use enemata and injections of normal salt solution intravenously and subcutaneously. (4) At the beginning of the treatment the bowels are evacuated by enemata so as to avoid diarrhea. (5) If nausea appears in the course of the treatment, stomach washing often relieves. (6) Maintenance of circulation by digitalis and caffein is not often required. (7) Preserve the body heat by application of external warmth. (8) Fat is eliminated from the diet; carbohydrates given in simple form as oatmeal gruel, skimmed milk, and orange juice. If 100 grams in children is not retained by the stomach, a part was given in the form of glucose by the rectum. As improvement begins, the carbohydrate is gradually cut down.

*In Regard to Alkalies.*—He states that he tried alkalies for 15 years, but has given them up for some time for the following reasons: (1) Alkalies frequently upset the digestion, cause vomiting, and thus interfere with the administration of food, and, what is more import-

ant, with the administration of liquids. A diabetic patient who cannot take liquids in the early stages of coma is almost lost. To some extent the lack of liquids can be compensated by liquids introduced by rectum, by vein, or under the skin, but the quantity of liquids required is so great that these avenues of entrance are inadequate.

(2) It is quite possible that acids, which are held combined in an innocuous state in the body, are set free by the alkalis and no longer remain latent and harmless.

(3) The use of alkalis increases the excretion of acids through the kidneys. The excess of acids, whether free or combined, passing through the kidneys injures the kidneys, and if this continues for any considerable length of time anuria gradually develops. 'The showers of casts' at the beginning of coma are evidence of the injury to the kidneys by these acids.

(4) Convulsions and death not infrequently are reported as the result of the use of alkalis.

(5) The use of alkalis causes annoyance to the patient, work and worry for the nurses and doctors, and, if these must be given intravenously, exposes the patient to sepsis. I have seen this last condition result in patients coming to me who have been given alkaline treatment at the most modern hospitals.

(6) Finally and of decisive importance, it has repeatedly been shown that, even if the normal alkalinity of the blood is restored by alkalis, coma may continued and death result.

ZINCK, R. H., CLARK, H. M., AND EVANS, F. A.: **Protective Power of Serum in Pernicious Anemia.** *Johns Hopkins Hospital Bulletin*, Baltimore, January, 1922, xxxiii, No. 371, p. 16.

The above workers found that the serum of patients with hemolytic anemia and other conditions in which the spleen and liver were involved when compared with the serums from normal persons showed a marked diminution in protective power against hemolysis by saponin and sodium oleate. The conclusion was that saponin is a hemolytic agent foreign to the body, and that sodium oleate is one that is probably present in the body normally.

DE F. LAYTON.



HARRISSON, J. W. E.: The U. S. P. Test for Acetone in Alcohol. *Journal of American Pharmaceutical Association*, January, 1922, xi, p. 16.

"Prohibition has by necessity produced many new denatured alcohols some of which have been termed medicated alcohol. Medicated alcohols, so called because of their adaptability to certain restricted medicinal uses, particularly bathing, generally contain some substance that will produce nausea if imbibed, or alkaloids of an intense bitter taste.

"Occasionally acetone is encountered as one of the denaturing agents and during the examination of such a medicated alcohol it was noticed that the U. S. P. test did not give positive results though, undoubtedly, there was at least 5 per cent of acetone present.

"Further search showed the presence of a zinc salt as well, which was afterwards proved to be the interfering substance. Antimony and potassium tartrate, which is also a permissible denaturant, affects the test in the same manner, both salts apparently interfering with the action of the sodium nitroprussid which is very unstable.

"Numerous tests advocated to establish the presence of acetone were tried in an endeavor to find one unaffected by the interfering metallic salts. Following is a résumé in tabular form of the results obtained:

	U. S. P. Test	Iodoform	Vitali	Chautard	Deniges
Alcohol, 85% .....	Neg.	Neg.	False	Neg.	False
Alcohol, 1% acetone,...	Pos.	Pos.	False	Neg.	False
Alcohol, .2% acetone,...	Pos.	Pos.	False	Neg.	False
Alcohol, .1% acetone,...	Neg.	Pos.	False	Neg.	False
Alcohol, acetone,					
Zinc Chlorid .....	Neg.	Pos.	False	Neg.	False
Alcohol, Acetone, Antimony					
and Potassium Tartrate,	Neg.	Pos.	False	Neg.	False

"Alcohol containing 1 per cent acetone and the amount of metallic salts required by the Internal Revenue Department was used for the latter experiments.

"Upon consulting the table the iodoform test seems to have been the most satisfactory; this is essentially that of Gunning. A small

amount of iodine test solution is added to 5 c. c. of the sample and then sufficient potassium hydrate test solution or ammonia water to nearly decolorize the iodine. No heat is used or a positive test will be obtained with pure alcohol.

"A more satisfactory modification is to add 1 c. c. of potassium hydrate T. S. to 5 c. c. of the alcohol and then add iodine T. S. until colored slightly. In the presence of at least 0.25 per cent of acetone there will be an immediate precipitate of iodoform. Pure grain alcohol will gradually give a positive reaction.

The U. S. P. test may be satisfactorily applied if the sample is previously distilled."

DORAN, J. M.: **How Alcohol is Denatured.** *Bulletin of Pharmacy*, February, 1922, xxvi, No. 2, p. 64.

For those who are not familiar with the governmental system of denaturation the author briefly outlines the plan. Alcohol is produced in a bonded industrial alcohol plant. Government officers are on continuous duty at these plants while they are in operation, and the openings to the stills, pipes, tanks, etc., are secured with government locks, the keys of which are held by the officers.

The alcohol, after production, is measured—"gauged", we term it—and is then removed to the adjoining bonded warehouse or bonded denaturing plant, as the case may be.

The bonded warehouse is a storage place where the alcohol is kept under government lock and key until the proprietor disposes of it either by paying the tax and removing it (1) upon a permit, by removing it (2) to the bonded denaturing house; by removing it (3) for export or other lawful purpose.

A Government officer is on duty at the denaturing plant at all times when operations are being carried on. Here likewise government locks are on all pipes and tanks by which access could be had to the alcohol. The denaturing, or mixing the alcohol with the material called for in any specific formula, is done under the officers' supervision.

Completely denatured alcohol is sold without permit. It contains as denaturing agents wood alcohol, kerosene, pyridine, benzol, etc., depending upon the particular formula called for. It is for gen-



eral uses, such as automobile radiators, anti-freeze solutions, paints, varnishes, and household fuel.

Specially denatured alcohol is permitted to go only to a bonded manufacturer and for specific purposes. Its movement is subject to such record and check as enables the commissioner to know who gets it, how much he gets and what he does with it.

During the past six months the commissioner has authorized formulas that have transferred hundreds of legitimate manufacturers from the class using pure alcohol to the class using denatured alcohol. The department works with the manufacturer, and it is most gratifying to note the hearty coöperation that has been extended to the department in the working out of mutual problems.

We are at present denaturing perhaps two-thirds of the alcohol produced, and the ratio of denatured to pure alcohol is constantly increasing.

European countries antedated us in the denaturation idea. The author believes he is safe in saying, however, that we are far in advance of them in its application at present. We have now authorized in the United States six formulas for completely denatured alcohol and something like sixty formulas for specially denatured alcohol. These cover a great variety of general industries and thousands of specific products, but do not as yet provide for pharmaceuticals or other products that may be used internally.

CONRAN, P. C.: On Dropping of the Stomach: a Study Based on a Series of 150 Cases. *The Quarterly Journal of Medicine*, January, 1922, No. 58, p. 144.

Severe gastropptosis is frequently met with in persons of both sexes who complain of digestive symptoms. In these cases it was several times more common in women than in men, but this predominance had little or no relation to childbirth, as the condition was found almost as frequently in childless women as in mothers. A low position of the stomach is commonly associated with a tall spare build, especially in the case of men. Severe gastropptosis may be unaccompanied by any symptoms which could be reasonably attributed to it. Gastropptosis is only one manifestation of the general condition referred to as the *habitus asthenicus* and *habitus ptoticus* by various

authors. That the hypotonic diathesis may be congenital is indicated by the discovery of severe gastropotosis in young children. Such children may reach adult life, and even old age, without suffering any inconvenience, provided that they lead an equable existence and are subjected to no great strain by severe illness, overwork, shock or worry, a rapid succession or a large number of confinements, or other means. In the event of the occurrence of such a strain, an individual with the hypotonic diathesis has a tendency, greater than in the case of a normal individual, to develop a certain train of symptoms. The fact that women are liable to the strain of menstruation in addition to those usually bringing on the group of symptom in men may explain the greater frequency of the syndrome in the former sex. When a person with this diathesis is subjected to such a strain a vicious circle is set up which, if not broken, seriously undermines his health and resistance powers, and renders him especially susceptible to infection by pathogenic organisms, such as the tubercle bacillus, the organisms causing pyorrhea, and others. A general lack of tone in the musculature of the alimentary tract manifests itself together with an alteration in gastric (and probably intestinal) secretions. There is a tendency to stasis in the stomach, ileum, appendix, and large intestine; and, once started this delay in the passage of the contents is assisted by an altered configuration of one or more of the viscera. The increasing stasis frequently results in ill health attributed to absorption of toxins, as shown by anemia with a sallow complexion, loss of weight, a fall in the blood-pressure, and symptoms such as languor, anorexia, headache, depression, insomnia, and susceptibility to cold. The malnutrition of the tissues which results, aggravated by distaste for food, and alterations in the digestive secretions, leads to a further weakening of the gastro-intestinal musculature, and still greater stasis of the contents. The symptoms vary greatly and are not always in accordance with the physical signs discovered. Generally speaking they roughly correspond with the section of the alimentary canal in which stasis predominates. Thus intestinal delay is associated with constipation, sometimes alternating with attacks of diarrhea and accompanied with the passage of mucus, and with irregular dull discomfort or pain, mostly in one or other of the iliac fossae or in the upper abdomen; there may also be symptoms suggesting toxemia. With gastric delay there may be eructations of gas and sour liquid, nausea, possibly vomiting, often with epigastric or



umbilical pain and with tenderness at a point in the middle line above the navel. It must be recognized that stasis may be present in either situation without causing subjective symptoms. Some evidence of intestinal stasis, either an X-ray finding, or a history of constipation was obtainable in 91 of 100 uncomplicated cases; and of the remaining 9, 7 complained of no digestive symptoms but were examined radiographically in the hope of discovering a cause for headache, high blood-pressure, or some other condition not necessarily connected with the digestive organs. An adequate dietary, sufficient exercise, and careful attention to the bowels during childhood and adolescence are the most important points in prophylaxis. In any case of obstinate constipation or indigestion X-ray examination should be made before the vicious cycle is fully set up and the symptoms relieved before the general health is impaired. When once the condition has reached the stage when the various derangements of function react upon each other with progressively ill effects, a course of medical treatment, extending over several months, should be carried out. The constipation is relieved by means of a lacto vegetarian diet, paraffin, and abdominal massage, with perhaps electrical treatment, and, if severe, intestinal lavage. Nutrition is improved by rest, diet, and absence of worry, bromides being given if there is great irritability or insomnia. Hematinics are given if the anemia is severe, antacids if there is gastric hyperacidity, and hydrochloric acid and pepsin if there is poverty of the gastric juice. In cases of prolonged gastric delay, daily lavage of the stomach will assist that organ to recover its tone. In order to obviate the effect of dropping of the viscera in assisting in the production of stasis, the patient rests on an inclined plane with the feet raised. If such a régime is possible the prognosis is good as regards the relief of symptoms, and provided the after treatment advised is also carefully carried out, as regards the probability of a relapse. The tissues may be again subjected to some severe stress, but the musculature of the alimentary canal will now be in a more resistant condition.

MILLS, A.: *The Wassermann Test in General Practice.* *Edinburgh Medical Journal*, January, 1922, xxxiii, 19.

Mills found in a study of inherited syphilis that a positive father may propagate syphilitic children long after he has ceased to be di-

rectly infective to the mother. In an industrial school it was found that 70 per cent of the children were the subjects of inherited syphilis. Many of these children failed to display the cardinal signs but the disease manifested itself in a variety of other conditions such as dietetic difficulties in which there was little or no increase in weight or actual wasting. He found that the persistent anemia and gastro-intestinal symptoms were often greatly benefited by Grey powder. He further states that epilepsy and anginal symptoms were noted to be the frequent results of syphilis. The article is concluded by saying that syphilis can give rise to as many symptoms as there are functions of the nervous system.

DE F. LAYTON.

MCCANN, W. S.: **The Dietary Requirements in Pulmonary Tuberculosis.** *American Review of Tuberculosis*. January, 1922, v, No. 11, p. 870.

Estimates of daily energy requirements are arrived at by basal heat production, making suitable additions for the effects of fever, food ingestion, and of coughing on the metabolism. The aim has been to devise a diet which will increase, as little as possible, the volume of respiration and the circulation rate through the lungs, in order to limit the functional demands upon an injured organ.

High protein diets greatly increase the metabolism and consequently greatly enlarge the demands upon the cardiorespiratory system. While nitrogen balance may be attained on low protein diet, this is only possible when the protein metabolism is spared by an excessive ingestion of non-protein food, chiefly carbohydrate. The effect of the carbohydrate rich diet is to increase greatly the breathing volume. Fat, which is metabolized with the greatest economy of respiratory function, is not so efficient as carbohydrate in sparing protein.

Woodyatt has explained the methods of calculating the balance between the ketogenic and antiketogenic factors in a diet. Using his methods one finds that diets furnishing about 2,500 calories, 60 to 90 grams of protein and 200 grams of fat, would require about 100 grams of carbohydrate to maintain Shaffer's ratio. In this case one-sixth of the total calories would be derived from carbohydrate. It



would be well to set one-fifth of the total calories as the minimum for the proportion of carbohydrates in diet. Satisfactory nutrition may be maintained by the use of 60 to 90 grams of protein per diem with the use of fats up to the limits of digestive capacity, and sufficient carbohydrate to bring the total caloric value to from 2,500 to 3,000 calories.

C. A. SCHMID.

COHEN, S. **Laryngeal Tuberculosis.** *New York Medical Journal*, December 7, 1921, cxiv, No. 11, p. 636.

Tuberculosis is the most frequent chronic disease of the larynx, and is almost always secondary to some tuberculous deposit in the lung. Cases of primary laryngeal tuberculosis are rare and doubtful.

There are several theories as to the method of entrance of the tubercle bacillus into the larynx: (1) That the infection is carried to the larynx by the lymphatic or blood stream; and (2) by direct infection through contact with the tuberculous matter.

The direct contact theory is probably the correct one for the following reasons: (1) That when infection exists in Waldeyer's ring, some of it drops and naturally falls in a straight line, therefore it must fall into the posterior part of the larynx (or arytenoid region), thus explaining why laryngeal tuberculosis usually commences in this area; (2) that the tuberculous sputum passing over the laryngeal mucosa infects it, and the shape of the larynx (the interarytenoid region, shaped like the beak of pitcher) causes fluids and other foreign matter occasionally to come in contact with this region, but never touches the region of the anterior commissure; and (3) the fact that the posterior part of the larynx is the musculo-articular center makes this part of the larynx more prone to various abnormalities and injuries, and therefore more susceptible to infection.

**SYMPTOMS.**—*Subjective.*—Patients with pulmonary phthisis, will complain of spells of hoarseness, intermingled with spells of absolute freedom from any vocal troubles. Gradually these attacks of hoarseness lengthen, until they become a permanent feature, and in the stages of the disease, the voice is almost completely gone.

Cough is the most common symptom present. In the later stages

it becomes paroxysmal, like that of pertussis or of a foreign body in the larynx.

Pain, whether on using the voice or in swallowing is present in about half the cases. At first it is a tickling sensation in the throat. The pain depends upon the infiltration and ulceration of the epiglottis and aryteno-epiglottic folds.

Dyspnea depends more upon the lung involvement.

Expectoration depends on the pulmonary condition, until ulceration sets, in, when there is much foul, dirty secretion.

Hemoptysis may come from the laryngeal ulcerations, and the amount is usually small.

*Objective.*—The patient has the general look of a tuberculous person. Early, there is the peculiar pallor of the laryngeal mucosa, described by Ballenger as “ashen grey.”

A congestion in the region of the vocal processes is one of the earliest signs.

The mucosa over the interarytenoid space bulges, showing commencing infiltration with concomitant difficulty in adduction of the vocal cords.

Involvement of the arytenoid is followed by involvement of the aryteno-epiglottic folds, producing the pear-shaped picture. The infiltration spreads and involves the epiglottis, which swells most on its anterior and free surfaces and produces the turban-shaped epiglottis.

The infiltration is produced by the formation of small tubercles which are under the mucosa; the process spreads by their coalescence.

These structures undergo cheesy degeneration and break down, rupturing through the mucosa, thus presenting the tuberculous ulcer.

The ulceration may be superficial, or extend down to and involve the cartilaginous framework of the larynx. After the ulceration stage, there is a peculiar odor in the mouth.

Another frequent condition is the formation of new growths in the larynx or tuberculoma. This is an intervening stage between that of tumefaction and ulceration. It occurs in the more chronic cases, in the interarytenoid space.

*DIAGNOSIS.*—Tuberculous lesions usually are at the posterior part of the larynx and are multiple. Syphilis is usually anterior and not multiple. Often difficult to differentiate between laryngeal tuberculosis, syphilis, and cancer. The important leads are the history, age of patient, presence or absence of a positive Wassermann, finding



the tubercle bacilli in the smear or sputum and a microscopic examination of a removed section.

**TREATMENT.**—The same general treatment as for pulmonary tuberculosis is necessary. When not certain of the diagnosis, give a course of mercury and iodids. Many cases are a combination of syphilitic and tuberculous involvement of the throat.

During stage of pallor and infiltration, the use of antiseptic and astringent sprays, as 1 per cent zinc sulphate or 3 per cent formaldehyd, is of some value. Steam inhalations often make the patients feel worse. It may be of value to puncture the tumified area, with a pointed cautery, at white heat. (This causes reactive inflammation, and an ingrowth of newly formed blood-vessels, and so prevents the advance of the ulcerative or tuberculomatous stages).

During the ulcerative stage the application of a 25 to 50 per cent lactic acid solution into the ulcers, preceded by curreting them is recommended. The actual cautery may be tried here also. The x-ray, radiant ray, sun ray, and radium are of some value.

For dysphagia, spray the larynx with a 2 per cent cocain solution before each meal. Amputation of the epiglottis, when badly ulcerated, helps. Injection of the superior laryngeal nerve is of great value. One may have to feed the patient with a glass tube, or resort to rectal feeding. For dyspnea a tracheotomy may be necessary. For pain anesthesin, or orthoform lozenges are very good. Orthoform and aristol insufflations or the laryngotracheal injection of a weak menthol and camphor oil preparation is of some help.

J. ROSE.

**PUPER, A.: Human Anthrax and Salvarsan. *Medical Journal of South Africa*, November, 1921, xvii, 74.**

It is claimed that salvarsan acts as a specific on human anthrax. A history of cases which apparently confirms this assertion was given in the *Medical Journal of South Africa* for November, 1918, and in the *South African Medical Record* for February 12, 1921. As it appeared that the value of salvarsan in the treatment of human anthrax is not fully realized in South Africa, the author cites the following case.

The patient first noticed a pimple on his face, which in a week's

time developed into a big sore. He was admitted to the hospital. Scrapings taken from the sore showed anthrax bacilli, and diagnosis confirmed by culture. An injection of 0.6 neosalvarsan was administered, and the same amount on next day; the day following that neosalvarsan 0.75 was given, and a similar dose given four days later. In two more days' time the patient was practically well, and discharged from the hospital cured in ten days from date of admission to hospital.

RACKEMANN, F. M.: **A Clinical Classification of Asthma Based upon a Review of 648 Cases.** *The American Journal of the Medical Sciences*, December, 1921, clxii, No. 6, No. 597, p. 802.

Asthmatics are divided into two classes: (1) Those sensitive to foreign proteins, in which the cause is extrinsic; and (2) those not sensitive where the cause is inside the body, that is intrinsic. Foreign proteins may enter the body in several ways, particularly through the respiratory and gastro-intestinal tracts. Five groups of cases are here reported. Group A, pollen hay-fever and asthma, comprises the cases sensitive to plant pollens, and can be easily told by a careful history and without skin tests. Between attacks of asthma the patients are normal, as the attacks lengthen and the intervals shorten, a secondary pulmonary emphysema develops. Group B, dust asthma, includes the cases sensitive to foreign proteins other than pollens, the dust entering by way of the respiratory tract. Here are found cases of horse asthma, egg-white, feathers, wheat flour, coffee, cat and dog hair dust. Group C, food idiosyncrasy manifests itself by asthma, by urticaria, by angioneurotic edema. These are traced to eggs, wheat, meat, nuts, fish, milk. Group D, bacterial asthma, is perhaps the most common group and is subdivided as follows: Asthma dating from an acute respiratory infection; dependent on seasonal changes; asthmas in children, usually coming after a cold. Group E, reflex asthma, is due to malnutrition, constipation, diseased tonsils, lung abscess, bad teeth, chronic pulmonary tuberculosis.

The treatment consists of removal of the specific asthmatic cause, or if necessary in desensitizing the patient by producing an active immunity by furnishing the proper vaccine.

A. T. MAYS.



ACHARD, M. Ch.: **Diphtheria in Association With Other Diseases (Diphtheric Associes)**. *Bulletin (Le) Medica*, 1921, xxxv, 421.

Diphtheria is often associated with other infections, and its prognosis is modified by them. Diphtheritic angina is never pure, as the throat always contains a number of organisms. But a diphtheritic case cannot be considered combined unless a great amount of other than the Löffler bacillus.

In the author's case a diphtheria angina existed, which at first presented itself in the form of a simple cryptic angina. It was easily controlled by hot lavages of the throat, but later the patient became worse. Large numbers of diphtheria and pneumonia bacilli were found in the cultures. It seems that the disease, in the beginning, was a pneumococcic angina, later complicated with diphtheria. The anti-diphtheritic serum rapidly arrested the latter, but the pneumococcic angina persisted for some time. Toward the end of the disease, a mucopurulent rhinoparingitis, probably due to streptococci, was observed.

During the second stage of the disease an adenopathy developed beneath the maxillary angle. Albumin was found in the urine. These symptoms rapidly disappeared under hot compresses. White spots were the first signs. They form a grayish, white spot. The fibrinous mass covering them contain leukocytes and microbes, either pure pneumococci, or in combination with streptococci. Angina is associated with various adenopathies. Usually the general symptoms improve on the sixth day, but the local lesions will persist for seventeen days.

This type of angina may be erythematous, pseudomembranous, herpetic or suppurative. It may end fatally. The association of pneumococcic infection with diphtheria is rare.

DUBOFF, W. S., AND MARKEL, C.: **Terminal or Cachectic Edema in the Course of Pulmonary Tuberculosis**. *American Review of Tuberculosis*, February, 1922, v, No. 12, p. 973.

The terminal edemas of phthisis present themselves in three clinical groups: (1) Cardiac, (2) Nephritic, and (3) Agonal.

The cardiac group is a small group in which the edema may simu-

late the rapid anasarca of acute nephritis, or appear slowly with an accumulation in the ankles, gradually extending up the body. In this group we should insist on definite proof of heart failure.

The nephritic group occurs most frequently in chronic fibroid cases of long standing with apparently latent pulmonary lesion. The characteristic renal change is a focal sclerosis. The gradual failure of the kidney to eliminate is the probable explanation of an edema simulating the cardiac type.

The agonal group of edemas is probably caused by predissolution metabolic changes in the tissues themselves, resulting in the conversion of hydrophobic into hydrophilic colloids. The kidneys show secondary changes in function.

C. A. SCHMID.

RINGER, P. H., AND MINOR, C. L.: **The Intravenous Injection of Calcium Chlorid in the Treatment of Intestinal Tuberculosis.** *American Review of Tuberculosis*, January, 1922, v, No. 11, p. 876.

The authors set forth the value of the intravenous injection of calcium chlorid in varying doses from 1 c. c. to 10 c. c. of a 5 per cent solution, the intervals being dependent upon the needs of the case. They do not claim a curative agent but claim its great value in the relief of the pronounced diarrhea and severe pain incident to this condition.

C. A. SCHMID.

STADIE, W. C.: **Construction of an Oxygen Chamber for the Treatment of Pneumonia.** *The Journal of Experimental Medicine*, March, 1922, xxxv, No. 3, p. 323.

With the aid of photographs and schematic drawings, Stadie describes in detail an oxygen chamber actually built in the wards of the Hospital of the Rockefeller Institute for Medical Research. It measures 10x8x8 feet, length, width, and height respectively, having a total capacity of 640 cubic feet. The entire apparatus includes the following: the oxygen chamber proper, doors for entrance, entrance lock, food lock; ventilating system consisting of a fan, re-



frigerator, and a carbon dioxid scrubber; the filling and maintenance apparatus, consisting of oxygen tanks, a solenoid valve for the automatic regulation of the oxygen, an automatic oxygen analyzer and oxygen maintenance device, a carbon dioxid analyzer.

This chamber can be quickly filled with oxygen in any concentration up to 65 per cent and maintained at the desired level for an indefinite time. The chamber is designed so that pneumonia patients with anoxemia may be placed in it and may breathe an atmosphere containing from forty to sixty per cent of oxygen. Ingress and egress are easy, operation is inexpensive, and the chamber comfortably accommodates the patient and the attendants.

H. M. FEINBLATT.

WHITE, F. W.: The Value of Medical Biliary Drainage for Diagnosis and Treatment of Diseases of the Gall-Bladder and Bile Ducts. *The Boston Medical and Surgical Journal*, February 16, 1922, clxxvi, No. 7, p. 206.

The author reports his general impressions of the method based upon a study of about 100 cases.

His summary is as follows: The profession owes Meltzer and Lyon a debt for their stimulation of the study of the liver. The early papers seemed over-enthusiastic and dogmatic, and said too little about the limitations and difficulties of the method. The physiology of the method, the cause of the color change, the action of  $MgSO_4$  on the gall-bladder, the segregation of the bile, need further study in normal individuals or animals to give a firm foundation for clinical and diagnostic work. Its use for diagnosis has its difficulties and limitations. It is somewhat elaborate and time-consuming, consisting of intubation, lavage, aspiration, microscopical examination, cultures, etc., but it can be carried out on nine-tenth of the patients chosen for examination. It requires repetition of the drainage and also the use of X-ray for the best diagnostic work. The segregation of the bile, the study and interpretation of the cells and bacteria present difficulties, most of which can be overcome by experience. The pathologic area may be blocked off by obstruction, e. g., of the cystic duct, and the drainage not be very abnormal in an important case. In spite of these limitations the method has proved useful and

sometimes very useful in diagnosis. It helps to show whether the ducts are open or closed. If no dark or "B" bile is obtained on repeated drainage properly performed, we may suspect cystic duct obstruction, frequently with gall-stones. If no bile is obtained but pancreatic ferments or blood are found, common duct obstruction is present, frequently malignant. Cholecystitis and cholangitis cases, unless marked obstruction exists, usually give a bile which is abnormal in color, appearance, cells, mucus, and bacteria. Gall-bladder sand may aid in the diagnosis of gall-stones, but, in general, the drainage in gall-stone cases was not characteristic. In treatment, it is logical to combat biliary stasis, the well-recognized fore-runner of biliary catarrh, infections, and stones. We are not sure how completely this method empties the biliary passages in all cases, but in many it appears to do this very well. The best field for its use is in the milder and moderate grade of cholecystitis and choledochitis cases, where no marked obstruction exists. Many such cases are greatly relieved, or apparently cured, following this treatment. It is obviously unsuited for treatment of acute, virulent infections of the gall-bladder, acute or chronic empyema, gangrenous cholecystitis or cases with known stones or tumor, or severe chronic obstructive cases which will not drain. It may be occasionally useful in some of these cases when surgery is contra-indicated.

M. M. BANOWITCH.

KOUIDJY, P.: *The Role Played by Physical Exercise in Respiratory Gymnastics.* *New York Medical Journal*, December 7, 1921, cxiv, No. 11, p. 627.

If respiratory exercises are indispensable for the profitable execution of the exercises of physical education, then they assume a preponderating rôle in respiratory gymnastics; in fact they constitute their basis. Of the two phases of respiration, inspiration is the active mode and is accomplished by means of a powerful group of muscles, the action of which can only be trained by a series of rational physical exercises. Their aim is to enlarge the thorax and, consequently, to increase the supply of oxygen which is indispensable for the metabolism of our bodies. Finally, since inspired air must be approximately at body temperature, it is necessary that the air



should enter through the nose and without the intermediation of any form of apparatus. With regard to spirometers, it has been shown that they can only serve to control the results obtained, but they can in no way be used for respiratory education. The latter can only be achieved when by conscious effort those muscles are trained which govern the respiratory function. Respiratory exercises, therefore, must be voluntary; further, they must bring about deep inspiration, and finally, they must be nasal in nature. These three principles constitute the basis of all respiratory gymnastics.

J. ROSE.

**MALLOCH, A.: A Study of Pneumonias and Types of Pneumococci.**

*The Quarterly Journal of Medicine*, January, 1922, No. 58, p. 103.

The conclusions drawn are: It is important to collect data about the incidence of types of pneumococci in England, and about the death rates in the various groups of lobar pneumonia, so that if later antiserum treatment is introduced, the results may be studied critically. Questions of epidemiology, such as that of healthy carriers of "fixed" types, the occurrence of small epidemics of lobar pneumonia due to one type, and the seasonal variation in the number of cases of lobar pneumonia due to certain types, should be answered. The "urine precipitin" and "rapid cultural" methods are valuable in the rapid determination of types, but by the former method alone the type cannot always be determined. The most satisfactory is the mouse inoculation method, in which the agglutinations can be done after about twelve hours. In the 65 lobar cases studied at one hospital the proportions of the different types were similar to those in America, except that much fewer of Type III were found, and more cases were due to a typical Type II subgroup. At least one third of all the lobar cases in this country are due to Type I, in which group specific antiserum has proved of benefit elsewhere. The death rates in all but the Type II cases were lower than in America. More complications are caused by Type I than by any other, but one case of endocarditis due to Type IV is described. The three "fixed" types were isolated from the sputum of cases of bronchopneumonia, but more often a Type IV pneumococcus was found—the commonest throat pneumococcus. Pfeiffer's bacillus may grow out in the mouse

or on blood agar inoculated with washed sputum of pneumonia cases, but it was found much more often in association with Type IV, in both lobar and especially in bronchopneumonic cases, than with the other types. One of the cases in which a Type III was also found—a case of bronchiolitis and bronchopneumonia—was probably caused by Pfeiffer's bacillus. Type I was isolated from cases of pneumococcal peritonitis; twice in fatal cases in children, with generalized septicemic form; and twice from adults (with no septicemia) who recovered.

M. M. BANOWITCH.

BARRON, M., AND HABEIN, H. C. **Lead Poisoning, with Special Reference to Poisoning from Lead Cosmetics. Report of 4 Fatal Cases of Encephalopathia Saturnina Occurring in One Family.** *The American Journal of the Medical Sciences*, December, 1921, clxii, No. 6, No. 597, p. 833.

Lead is the most important of the industrial poisons. Women are more susceptible to this poison than men. Abortions, miscarriages, and the early deaths of infants may be traced to it. Lead is deposited in the liver, kidneys, brain and other organs. Elimination takes place by urine and feces. The lead deposits in the form of lime salts in degenerating tubules similar to those of mercurial poisoning. In cases of encephalopathia saturnina lesions in the brain are not very prominent. Basophilic granulations of erythrocytes are characteristic. The use of cosmetics, containing lead, over a long period of time may result in poisoning, even in death. A face powder "Flake White" is lead carbonate and severe cases of poisoning have resulted from its use.

A. T. MAYS.

LANGSTON, W.: **Glucose Tolerance Test.** *The Journal of Laboratory and Clinical Medicine*, February, 1922, vii, No. 5, p. 293.

The author concludes as follows: Carbohydrate metabolism is under the control of the internal secretions and is sensitive to changes in endocrine function. Therefore blood sugar determinations may



aid in the diagnosis of these conditions. Carbohydrate metabolism is disturbed by carcinomatous growth, apparently in the same way as in certain endocrine disturbances. This disturbance is probably due to a secretion of the tumor cells; consequently the effect may occur quite early. If this be true, the blood sugar tolerance test should be a valuable diagnostic test. There is no sugar tolerance curve definitely characteristic of carcinoma, but most cases of carcinoma give a certain type of curve which is found in comparatively few other conditions, including tuberculosis, diabetes mellitus and hyperthyroidism. The test is of no value in suspected carcinoma of the bile tract area complicated by jaundice. The test needs further confirmation.

C. M. ANDERSON.

REGAN, J. C.: *Symptomatology of Influenza*. *New York Medical Journal*, December 7, 1921, cxvi, No. 11, p. 656.

The only symptoms which were absolutely constant in a study of 100 cases were headache and cough. The majority had also backache (70 per cent), sore throat (64 per cent), and chills (50 per cent). The remaining symptoms were as follows: Pain in limbs (34 per cent), dizziness (29 per cent), secretion of nose (28 per cent), vomiting (23 per cent), perspiration (23 per cent), secretion of the eyes (20 per cent), pains in joints (14 per cent), diarrhea (12 per cent), general soreness of the body (12 per cent), nosebleed (10 per cent), pain in neck (7 per cent), pain in abdomen (4 per cent).

The symptoms on the first day were chills, headache, backache, secretion of nose and eyes and vertigo. The headache lasted from two to four days and was frontal and dull. Backache lasted from two to four days, was severe, and of a dull aching character and localized in the lumbar region. The cough persists for from two to four days, and is severe and productive. Sore throat came with the onset. Pains in limbs were moderately severe and more frequent in the legs. Secretion of nose and eyes, and dizziness were not severe and lasted two to three days. Vomiting started on second or third day and lasted from two to four days; diarrhea likewise, with three to four bowel movements per day.

J. ROSE.

NI, T. G.: **Beriberi: Some Facts and the Possible Hypothesis.** The *Journal of Laboratory and Clinical Medicine*, March, 1922, vii, No. 6, p. 340.

The author gives the following summary: Disturbance of vitamin metabolism is one, if not the only one, factor causing beriberi. The disease can be produced in such a way that the infectious theory of its origin can be regarded as no longer tenable. The theory of nitrogen-starvation or of phosphorus-starvation may be discredited by comparing with the actual requirement. The source of vitamin in the body might be endogenous as well as exogenous. Muscular or mental strain might increase the vitamin requirement and assist to develop beriberi. Under different conditions vitamin may be labile or stable, active or inactive, so the same amount of vitamin in the body may not have the same antiberiberic function. Under different conditions the capability of cells and the utilization of vitamin in the body might be changed, which would have influence on causing beriberi. Many other theories of beriberi etiology, besides vitamin deficiency, can be disproved by experiments. Deficiency in vitamin and deficiency in general nutrition may not always go side by side: beriberi may appear before the general condition breaks down and may appear even after the disturbance of general nutrition.

The author also intimates that he thinks the actual cause of the condition will be found to be of a protozoan transmission, and not due to diet.

C. M. ANDERSON.

BARACH, J. H.: **Tonsil Thyroid Syndrome in the Female.** *New York Medical Journal*, December 7, 1921, cxiv, No. 11, p. 648.

The syndrome is a frequent occurrence in the female up to middle life. The pathological sequence is first a chronic tonsillar infection, long continued, resulting in a constitutional effect. The result is a colloid goiter with a well-developed clinical picture of hypothyroidism. Then in the chronic tonsillar infection the system becomes impoverished in iodine and colloid goiter with hypothyroidism is the result.

*Order of Frequency of Chief Symptoms.*—Chronic tonsillitis, hy-



peritrophic; tonsillar node; thyroid gland enlarged; complexion pasty and sallow; skin dry; hair dry; breasts, excessive development; menstrual function disturbed; subcutaneous tissue thickened, obesity; tendency to sterility; ate no breakfast; hands moist, cold cyanotic; body hypersensitive to cold; blood pressure low; pulse rate slow; tongue thickened and tooth-marked; speech thick and voice coarse; puffiness of face—eyelids swollen in the morning; drowsiness; early fatigue; dyspnea on exertion; alopecia; nails brittle; neuralgias.

J. ROSE.

**REVIEW: Intravenous Injection of Acriflavine.** *American Journal of Clinical Medicine*, April, 1922, xxix, 278.

"The following is quoted from an article by Browdy, published in the October, 1921, number of *The Practitioner*:

"In the treatment of acute gonorrhea, one feels that something better is necessary than the ordinary routine methods, and it occurred to me that, possibly, the intravenous injections of acriflavine might be of value. Prof. Carl Browning informs me that 300 c. c. of a 1:1000 solution has been injected intravenously into a man without ill effect; but it is advisable to make the injection slowly; that is, at the rate of 50 c. c. per minute if a 1:1000 solution is used, or 25 c. c. per minute if the concentration is 1:500. The author treated several patients, suffering from acute gonorrhea, by this method and obtained extremely satisfactory results. The author used the original '606'-two-way stopcock syringe, and injected 200 c. c. of a 1:1000 solution on the first day, and 300 c. c. on the third day. The solution was made with sterilized normal saline solution and filtered through sterilized gauze. Within two hours, the flavine could be detected in the urine by its greenish-yellow color and seven days after the injection, it was still noticeable. The day following the injection, the urethral discharge had greatly diminished and, by the seventh, the patient was dismissed as cured.

"There was no relapse. No adverse symptoms were observed after the injection; patients went about their work as usual. As the greater part of the drug is excreted in the urine, it no doubt exerts its action on the urethra; but I am inclined to think that there is also some action on the blood.' "

**BRENNER I. M.:** Influenza as a Primary Edema of the Respiratory Mucous Membranes and Adnexa. *New York Medical Journal*, December, 7, 1921, cxiv, No. 11, p. 651.

Whenever the infecting organism of influenza implants itself upon the respiratory tract there will be a definite objective edema, as is always present on the uvula and fauces at the initial onset of the disease. Pathologically, large amounts of fluid are present in the lungs and they present an entirely different picture from that of bronchopneumonia. There is a congealed area of protoplasmic distended endothelial cells, which the author has called congelatinous pneumonia. Osmosis is a definite accepted phenomenon, and the response of the organism to changes in the osmotic pressure has been clinically demonstrated. Bleeding, the administration of immune or non-specific serum, glucose injections, colonic irrigation, diaphoresis, menstruation, all serve to remove fluids; they are agents of dehydration, thereby increasing intra-arterial osmotic tension. Therefore, any treatment which brings about dehydration and causes blood concentration will, by osmosis, remove the fluid from the edematous protoplasmic cells of the lung tissue, brain or gastro-intestinal tract. Therapy directed to this end has proved a positive means of treating this type of infection.

J. ROSE.

**FAHR, G., AND RONZONE, E.:** Circulatory Compensation for Deficient Oxygen Carrying Capacity of the Blood in Severe Anemias. *Archives of Internal Medicine*, March, 1922, xxix, No. 3, p. 331.

A patient with pernicious anemia of such severe grade that his blood possessed an oxygen carrying capacity of only 2.2 c. c. per 100 c. c. was found to be utilizing a normal amount of oxygen in spite of the fact that his resting pulse rate was quite normal. As the normal organism will abstract as much as 5.5 c. c. of oxygen from the blood during its circuit a study was instituted to account for the compensatory precesses that allowed the anemic patient to avail himself of sufficient oxygen to exist. A study of the arterial and venous blood of this patient convinced the authors that it was accomplished by a remarkable increase in the minute volume output of blood. The fac-



tors which made this possible, without increase in the heart rate, were found to be dependent upon a decrease in the blood viscosity, amounting in this case to a reduction to 45 per cent of its normal value, and an "increased effective cross section of the vascular tubing". It was found that the capillaries in the skin were contracted down to half the normal diameter or less, thus forcing more of the blood through the more vital organs. This reaction of the skin capillaries was considered one of the factors that contribute to the pallor in anemia. Evidence is adduced to show that even with the patient at rest, the heart muscle was utilizing close to the upper limit of available oxygen, and it is emphasized that anoxemia of the heart might readily be induced by slight extra exertion. The importance of rest for such a patient is readily seen. There is support in these findings for the pathologists contention that the heart muscle changes of pernicious anemia are due to lack of oxygen.

T. HOWARD.

WOLFERTH, C. C.: Observations on the Treatment of Auricular Fibrillation by Quinidin Sulphate. *The American Journal of the Medical Sciences*, December, 1921, clxii, No. 6, No. 597, p. 812.

The author reports 12 cases of auricular fibrillation, with the result of treatment by quinidin sulphate. In 7 the normal rhythm was restored, in 1 the fibrillation was converted to flutter. In 4 cases quinidin failed to abolish the fibrillation. In one of the unsuccessful cases digitalis had previously caused a short normal rhythm. Two successful cases had been previously treated with digitalis without result, and in 1 case the fibrillation ceased in one day and remained for two months, the other required quinidin for 5 days before ceasing, and the cessation persisted for 3 months. Clinically both were improved. The most striking effect occurred in a case associated with hyperthyroidism, one day's treatment (1.4 grams) changed the ventricular rate of 150 to a normal rhythm with a rate of 88. Alarming symptoms (dyspnea, dizziness, precordial distress or pain, weakness, tinnitus, stuffiness in head, deafness) did not develop in any of the author's cases. Urinary excretion was not affected as none had edema. Three developed increase of ventricular rate, and one of these symptoms of cardiac embarrassment, so the drug was discon-

tinued, but the other two tolerated their rapid rate well, and both established a normal rhythm. Electrocardiograms showed the auricular oscillations becoming larger, less rapid, more uniform, approaching flutter as the treatment continued. After the restoration of rhythm the P-R interval measured over 0.2 second in 6 cases. There is no definite relation between the dose of quinidin and the P-R interval. The smallest dose lengthened it to 0.32 second. The presence or absence of valvular disease did not affect the treatment. The best results were obtained in cases of short duration. For quinidin therapy good heart muscle and fair compensation are required. Cases should be under close observation either by a well trained nurse or in a hospital where frequent cardiograms can be made. Because of the possible hypersusceptibility one or two small doses (0.2 gram) should be given. If there is no hypersusceptibility larger doses may be given beginning with approximately 0.4 gram t. i. d. This is continued for 10 days. If unsuccessful a second course may be given after a rest period. When normal rhythm is discovered larger doses should be discontinued. It is customary not to give more than 0.2 gram b. d. It is reasonable to avoid any strain on the heart for a long time after restoration of normal rhythm.

A. T. MAYS.

LAPENTA, A. V.: **Aspergillois and Pulmonary Pseudotuberculosis.**  
*New York Medical Journal*, December 7, 1921, cxiv, No. 11, p. 629.

*Aspergillus malignus* has been found often in the ear of man causing a persistent and painful otitis with loss of hearing. The *Aspergillus pictor* is found as the cause of certain chronic skin diseases in South America. *Aspergillus fumigatus* produces a typical pseudotuberculosis in animals and man. The lesions produced by it closely resemble those of fibroid tuberculosis.

These cases of aspergillois quickly respond to treatment. When untreated they become progressively worse and, terminally, are often associated with tuberculosis. The tuberculous infection supervenes secondarily and is much favored both by the systemic and local lowering of resistance, due to the aspergillus and its toxin.

*Aspergillus fumigatus* grows readily on all laboratory media, and especially well upon potato and bread. For its study, Raulin's medium is to be preferred.



The symptomatology of this disease varies from that of acute mycoid bronchopneumonia to that of the chronic tuberculosis. There is emaciation, mild night fever, with sweat, cough, etc. In nearly every case there is at times some bloody sputum. Large pulmonary hemorrhages can result.

This parasite can also give rise to a very acute type of bronchopneumonia, with all signs of a grave infection.

The disease can be rapidly cured by appropriate treatment.

Iodin is specifically destructive to the life of the aspergillus, and serves to cause absorption of the infiltration caused by the infection. It is used in the form of the iodids of potassium and sodium. For intravenous treatment, sodium iodid, in doses of 1 or 2 grams, in 25 c. c. of saline solution is recommended. Proper hygienic measures and absolute rest are essential.

Under the administration of the iodids, the infection clears up in four or five weeks.

The early recognition and treatment of this infection is of great importance in its relationship to tuberculosis. The necessity of sputum examinations in all suspicious cases for the detection of the *Aspergillus fumigatus* is obvious.

J. ROSE.

CLARK, H.: *The Measurement of Intravenous Temperatures.* *The Journal of Experimental Medicine*, March, 1922, xxxv, No. 3, p. 385.

We cannot assume that the clinical thermometer gives a true index of the mean internal temperature of the body, inasmuch as the temperatures of various parts of the body thus determined are generally different and the differences are not always consistent. The heat capacity of the instrument is sufficiently great to lower appreciably the temperature of the tissue with which it comes in contact, and the response is too slow to follow fluctuations. Although measurements made with the clinical thermometer are satisfactory for most purposes, experimental work often demands accurate determination of the blood temperature.

The author devised an apparatus by means of which the temperature of the blood flowing in the large vessels can be accurately deter-

mined. The temperatures are measured by a thermo-electric method, in which one makes use of the fact that the discontinuity of electric potential at a junction of two similar metals depends only upon the nature of the metals and temperature of the junction.

The apparatus consists essentially of the unit containing the couple to be placed in the body, which is referred to as the needle unit; the portable thermostat; the cable connecting the needle unit with the thermostat; and the galvanometer with necessary switches. The author describes each of these parts in detail.

Calibration curves were taken with a large water bath, stirred by a motor, the temperature being read with a microscope on a Bureau of Standards thermometer divided to  $0.1^{\circ}$  C. The curves are smooth and consistent to within  $0.01^{\circ}$  C. The author concludes that the error in intravenous measurements will not be greater than  $0.01^{\circ}$  C.

H. M. FEINBLATT.

SCHWATT, H.: **Practical Points in the Treatment of Pulmonary Hemorrhage.** *New York Medical Journal*, December 7, 1921, cxiv, No. 11, p. 631.

The determining influences in the causation of hemorrhage are one or another form of physical and even mental overexertion, trauma, excessive laughter and even sneezing, coughing, high blood-pressure, increased amount of fluid in the body, and atmospheric conditions. There is very little connection between everyday physical exertion and hemoptysis. The greatest proportion of hemorrhages have their onset while the patient has been at more or less complete rest and even during profound sleep or after negligible body movements. Excessive cough and similar respiratory exertions which increases the intrapulmonary pressure are the most important factors in determining the onset of hemoptysis.

Premonitory subjective symptoms are absent. Some patients complain of pain and oppression in the chest before the onset of hemoptysis objectively, there is frequently increased activity with signs of breaking down of the lesion.

The therapeutics of this complication is still based largely upon unsystematized and haphazard clinical observations and theoretical conceptions.



Since cessation of hemorrhage results from the formation of a clot in the ruptured vessel wall and its organization, the indications for treatment consist primarily in controlling all factors which would tend to dislodge the clot. This we seek to accomplish by lowering the pulmonary blood-pressure, preventing its increase, and by increasing the coagulability of the blood. Further indications are to prevent asphyxia by the aspiration of large quantities of blood and by insufficient expectoration, to guard against syncope and shock and to prevent such complications as atelectasis and aspiration pneumonia.

Generally, the patient is placed flat on his back without a pillow and occasionally with the foot of the bed or the lower extremities raised. He is warned against changing this position. He is directed not to speak at all or not above a whisper. He is doled out numerous drugs. Food is administered in homeopathic doses for fear that the efforts of mastication and swallowing will increase or renew the bleeding. More frequently he is starved for days.

According to our present physiological knowledge there is no basis for assuming that the moderate body movements of everyday life have any influence in raising the pulmonary blood-pressure so as to promote hemorrhage.

We do not believe that complete immobilization is necessary and that it serves to lessen the bleeding or to prevent its recurrence.

While the bleeding is active the patient should of course not be permitted any undue exertion. The clothing may be carefully removed and the patient placed comfortably in bed, preferably in a semi-recumbent position. The flat-on-the-back position may be indicated in cases with symptoms of cerebral anemia and collapse. After the active bleeding has stopped the patient may be permitted more freedom of movement. Rest in bed should be continued for eight days or longer. In some cases of long-continued blood spitting after a hemorrhage, it disappears on getting the patient out of bed.

Strict immobilization and the indiscriminate use of morphin are the principal causes of hypostatic congestion, atelectasis and broncho-pneumonia, complications more serious than the hemorrhage itself. Bromids, which in addition to their sedative effect probably increase the coagulability of the blood, may be employed.

The application of ice can have no effect either directly or indirectly on the bleeding vessel. The internal administration of ice may serve to relieve thirst after the loss of excessive amounts of blood.

If taken in excess it produces unpleasant gastric disturbances. It has been shown that irritation of the gastric and intestinal mucosa by cold produces a reflex dilatation of the pulmonary vessels. If so the ice would be contraindicated.

At the Montefiore Hospital every rational drug therapy has been applied at one time or another and discarded.

One of the oldest remedies is table salt. It is given in doses of one to 3 drams (11.25 c. c.) five or six times a day during the period of active bleeding, dissolved in water and administered through a drinking tube. It may be given intravenously, a 10 per cent warm hypotonic solution in doses of from 2 to 10 c. c. The addition of .02 of 1 per cent solution of calcium chlorid increases its efficacy. Sodium bromid in doses of 30 grains (1.95 grams) three times a day may be given instead of the salt, particularly if a sedative is indicated. Salt increases the coagulability of the blood temporarily.

Ergot and digitalis raise the pulmonary pressure and adrenalin has a strongly stimulating effect on the heart; they are therefore harmful. Amyl nitrite raises the pulmonary pressure, though it lowers the systemic.

Lead acetate, stylicin, calcium chlorid and gelatin are harmless but without any therapeutic value. The inhalation of chloroform has gained no recognition. Defibrinated horse serum is still used in private practice but has absolutely no value.

Emetin hydrochlorid hypodermically in doses of one-half to three quarters grain in 1 c. c. of water has been recommended of late. In some cases it acts rapidly. It is useful in cases not far advanced. In severe cases two or three injections may be given. The effect is probably due to lessening of pulmonary congestion.

Camphor in oil has been found wanting. Some patients react unfavorably to it with vomiting, cramps, headache and syncope.

Tying the extremities may be employed in severe and uncontrollable hemorrhage. Some unusual methods proposed have been venesection, sandbags applied to the bleeding side, strapping it with adhesive plaster, leeches applied to the buttocks. Extract of blood platelets, defibrinated exudates occurring in tuberculous peritonitis and pleuritis, pituitary extract, splenic and hepatic extracts, tannate of quinin, nauseating doses of ipecac, tartar emetic, pantopon and a great many of the other drugs of the pharmacopoeia have been put forward as panaceas for hemoptysis.



The most efficacious treatment in severe hemoptysis is the artificial collapse of the bleeding lung by inducing a pneumothorax, if we can determine with certainty the bleeding side.

The diet should be carefully regulated. Solids should be interdicted and the intake of fluids restricted during active bleeding. The nourishment should be lukewarm and should consist of soft, semiliquid foods such as milk in small quantities, cereals, soft-boiled eggs, jellies and gelatins. No effort should be made to move the bowels for a few days after the active hemorrhage has ceased. Later mild laxatives may be administered.

The rational treatment of hemorrhage should be based upon the following:

(1) No matter how severe the bleeding it is rarely immediately fatal.

(2) The great majority of hemorrhages are self-limited through the inherent tendency of the organism to effect a spontaneous control by changes in blood-pressure, by increase in the coagulability of the blood, by contraction of vessels and by thrombus formation.

(3) The undisturbed forces of nature are more effective and less harmful in controlling the bleeding than any drug therapy.

(4) The classical immobilization treatment and the use of morphin do a great deal more harm than good and are the causes of complications more dangerous than an untreated hemorrhage.

(5) There is no drug or other treatment except artificial pneumothorax that can be said to stop a hemorrhage.

(6) The principal function of the physician is to reassure the patient, to allay mental excitement, to lessen excessive cough, to place the patient in a comfortable position at reasonable bodily rest and to avoid meddling therapy.

(7) We are justified in employing those drugs and remedies which are known to have no harmful effects.

J. ROSE.

FRISCHMAN, L.: The Significance of Tracheobronchial Node Tuberculosis and Its Diagnosis. *New York Medical Journal*, December 7, 1921, cxiv, No. 11, p. 634.

In children and infants pulmonary tuberculosis is accompanied by enlargement and caseation of the intrapulmonary bronchial and

tracheal lymph nodes. The lesion occurs almost with equal frequency in all the lobes; there is little tendency for encapsulation by fibrous tissue, and cavitation is far less frequent than in adults. Dissemination of tubercle bacilli occurs frequently, with the setting up of processes in the meninges, spleen and other tissues. In adults, the point of predilection is in the apices, the disease tends to assume a chronic course, fibrous infiltration is quite frequent, and in advanced cases, cavitation is common. General dissemination is not common, except in the miliary type, or in the terminal stage of the disease. The usual method of healing in children is by calcification; in adults by fibrosis.

Ghon concludes that in children the pulmonary focus is primary, and the lymphatic foci secondary, because first, gross tubercle in the tracheobronchial nodes is never observable unless gross tubercle is present in the lungs also. Secondly, the changes in the lungs are always older than those in the nodes, *e. g.*, the lesion in the lungs was frequently found at autopsy to be encapsulated, while the nodes showed a less advanced stage of progress. Allen Krause, believes that tracheobronchial node tuberculosis can precede the pulmonary lesion and even exist independently of the latter.

In adults, there are two groups of tuberculous lesions: First, apical lesions; second, pulmonary focal tuberculosis. The lesion here is circumscribed, does not choose the apex but settles in the various lobes. Nearly half of these lesions are situated below the pleural surface, and fibrous adhesions are common. The incidence of focal tuberculosis increases after the tenth year. Ninety-two per cent of all adults possess lesions of focal tuberculosis.

When a localized focus of tuberculous infection is found in one of the lobes a similar lesion is found in the tracheobronchial nodes. The lesion of the lymphatic node is larger and more readily found than the pulmonary lesion, and frequently there is a chain of tuberculous nodes. The glands at the bifurcation of the trachea are first to be diseased.

**DIAGNOSIS OF TRACHEOBRONCHIAL NODE TUBERCULOSIS.**—Subjective signs: Anorexia, easy fatigue, lassitude, irregular elevation of temperature, and substernal pain, especially on deep breathing and exercise. Infants with enlarged tracheobronchial glands present a very marked expiratory stridor as the stenosis increases. Cough sets in, and is paroxysmal in character and brassy, suggestive of the cough



of pertussis, due to pressure of the enlarged gland on the vagus nerve. Constant pressure of the enlarged glands may cause erosion of the bronchi, esophagus or blood-vessels.

**PHYSICAL SIGNS.**—*Inspection.*—The child appears frail and puny, and anemic. The tuberculin reaction is positive. There are dilated veins over the anterior aspect of the thorax in 50 per cent of the cases. The face may appear somewhat puffy. The expansion of the apices may be unequal. In some cases the thyroid cartilage instead of descending with each inspiration remains stationary (sign of de la Camp).

*Palpation.*—In some cases there is tenderness over the manubrium sterni. Tenderness is commonly elicited by deep pressure over the upper dorsal spines (Petrushky's sign).

*Percussion.*—Of no value.

*Auscultation.*—Tracheal respiratory sounds heard over the dorsal vertebrae is strong indication of enlarged tracheobronchial nodes. This is known as the sign of d'Espine.

There is a venous hum frequently audible over the upper part of the sternum when the head is extended forcibly. This is the Eustace Smith sign, due to pressure upon the right jugular vein, or the vena azygos major. There is also whispered bronchophony over the thoracic vertebrae.

J. ROSE.

COOMBS, C. F.: **Streptococcal Infections of the Heart.** *The Quarterly Journal of Medicine*, January, 1922, No. 58, p. 114.

This report is divided into three parts. Rheumatic carditis; progressive ulceration of the endocardium; and the cardiac lesions that follow inoculations of animals with streptococci.

Part I deals with the examination of 37 hearts of patients with rheumatic infection, and is summarised as follows: There is a type of cardiac inflammation which is well defined histologically as well as clinically. Its characteristics are: (a) It is a pancarditis; all parts of the heart—myocardium, endocardium, pericardium—are attacked simultaneously and equally; (b) the histological changes are those of intracellular degeneration with interstitial reaction; these latter are focal in distribution, arising in and about blood- and lymph-

vessels and the connective tissues surrounding those vessels; (*d*) it is like those of other rheumatic tissues and almost certainly runs a brief course as in these others, though recurring from time to time and adding at each outburst to the permanent cicatricial changes seen particularly in the valves and to a less extent in the pericardium; and (*e*) the final stages of postrheumatic disease of the heart are free from these phenomena, and the patient dies of degenerative changes in the myocardium, largely, if not wholly, initiated, sustained, and completed by the mechanical embarrassments which these cicatricial changes impose on the action of the heart; reasons are given for regarding this kind of carditis as resulting from invasion of the heart from time to time, through its coronary blood supply, by streptococci.

Part II is based upon an exhaustive examination of hearts from 20 cases of endocardial ulceration in which streptococci were found either during life or after death or both.

*Summary.*—Part II.—Streptococcal ulceration of the endocardium is characterized by (*a*) disproportionately severe lesions of the endocardium and (*b*) the embolic nature of the myocardial lesions. The presumption is that *b* is secondary to *a*. The endocardium is invaded sometimes from its surface, sometimes through its own coronary blood-supply. This invasion, predisposed to by local and general defects of resistance, is due in some cases to obvious sources of infection, such as puerperal sepsis. When the source is not obvious, there is reason to suspect invasion of the system by the common streptococci of the alimentary or respiratory tract.

*Summary Part III.*—The cardiac lesions provoked by intravenous inoculations of rabbits with various strains of streptococci are found to be similar in their essential features: widespread endocardial inflammation and necrosis, with myocardial lesions of vascular origin. In both tissues endothelial proliferation is often the most striking feature of the inflammatory reaction.

*Conclusions.*—The lesions of the human heart which follow its invasion by streptococci are of two types. The first, occurring during childhood and adolescence, and usually known as “rheumatic” carditis, is characterized by the fact that all parts of the heart are simultaneously and almost equally attacked. Nearly always there are many intramyocardial foci of inflammation. The second type of lesion is that known as “ulcerative endocarditis”. In this the di-



rect attack of the streptococci is delivered upon the endocardium only; such lesions of the cardiac muscle and the rest of the heart as may occur are embolic in origin and secondary to the valvular infection. The changes found in "rheumatic" endocarditis are very constant in kind and distribution, so much so that it is fair to argue a similar constancy of the conditions predisposing to this form of cardiac infection, as well as of the method of infection. In streptococcal infection of the pericardium, on the other hand, every degree of variation is to be seen in the intensity of the morbid changes, both in the valves and in the embolic lesions of the rest of the heart. Among these wide variations in the intensity of the infective processes may be remarked a group of cases of "subacute" or "chronic" degree; *i. e.*, of cases in which the infective agent has only just succeeded in maintaining its hold upon the heart. There is a sufficiently close similarity in the histology of the myocardial lesions of some of these last cases, those of rheumatic pancarditis and those of experimental "rheumatic" infection of the heart, to support a belief in a similarity of the infective agent in all cases. The same may be said of a small number of specimens from (*a*) experimental infection of the heart with streptococci from a case of human ulcerative endocarditis, and (*b*) experimental infection with streptococci from the normal alimentary canal. Assuming this similarity between the infective agents to exist, the sharp divergence between the two types of human lesion noticed must be due to differences between the circumstances and method of the attack upon the heart. The type of cardiac lesion which results from experimental inoculation (*i. e.*, from introduction of a single large dose of streptococci into the circulation) is more closely akin in its main features to the progressive endocardial ulceration of the human subject than to rheumatic pancarditis.

Various considerations, on the other hand, lead to a belief in the causation of human rheumatic carditis by the entrance of small doses of streptococci (of a virulence greater than that of the organisms concerned in the causation of chronic ulcerative endocarditis) over a limited period.

M. M. BANOWITCH.

## SECTION ON LABORATORY AND RESEARCH

HIRSCH, E. F., AND WILLIAMS, J. L.: Hydrogen-ion Studies. I. Changes in the Reaction of the Blood During Anaphylactic Shock. *The Journal of Infectious Diseases*, March, 1922, xxx, No. 3, p. 259.

There is a diminished alkalinity of the blood during anaphylactic shock, apparently in proportion to the severity of the symptoms. This change in reaction may become so great as to be incompatible with life. The altered reaction of the blood is accompanied by a roughly proportional lowering of the alkali reserve. Slight changes (usually an increase) in the concentration of the sugar of the blood occur in anaphylactic shock, but not to the degree observed in prolonged acidosis.

M. M. BANOWITCH.

SCHAMBERG, J. F., KOLMER, J. A., AND RAIZISS, G. W.: The Influence upon Toxicity and Trypanocidal Activity of Shaking Acid and Alkalized Solutions of Arsphenamin and Solutions of Neo-arsphenamin in Air. *The American Journal of Syphilis*, January, 1922, vi, No. 1, p. 1.

The undue shaking of alkalized solutions of arsphenamin increases the toxicity; the shaking of such solutions is rarely necessary. The shaking of acid solutions of arsphenamin for one minute beyond the time necessary to effect solution is accompanied by a slight increase in toxicity. Ten minutes extra shaking increases the toxicity still further. The shaking of solutions of neoarsphenamin for even such short periods as one minute is accompanied by a great increase in toxicity. Shaking for ten minutes enormously increases the tox-



icity. It would appear from the studies that neo-arsphenamin should be dissolved with as little agitation and as little exposure to air as possible. Different lots and brands of arsphenamin and neo-arsphenamin vary considerably in their liability to oxidation on shaking. The trypanocidal power of acid solutions of arsphenamin is considerably increased after one minute of shaking but is decreased after ten minutes shaking. The trypanocidal power of alkalinized solutions of arsphenamin is considerably increased at the end of one minute's shaking and the increase is still evident after ten minutes' shaking. The explanation of the increase in trypanocidal power is probably to be found in the formation of "arsenoxide", which is known to exert a greater trypanocidal and spirochetidal effect than arsphenamin. The shaking of solutions of neo-arsphenamin is not accompanied by increase in trypanocidal effect.

M. M. BANOWITCH.

NAHAKARA, W.: Studies on Lymphoid Activity. VI. Immunity to Transplanted Cancer Induced by Injection of Olive Oil. *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 493.

It has already been demonstrated that immunity to transplanted cancer can be induced in white mice by the injection of homologous tissue and by certain physical agents, particularly x-rays and that this resistance is accompanied by a lymphoid cell infiltration. It was the purpose of the present experiments to determine whether or not the local reaction to olive oil is accompanied by lymphoid cell stimulation, and, if so, the effect on the resistance to cancer inoculation.

White mice received intraperitoneal injections of olive oil in doses varying from 0.1 to 0.7 c. c. and, after intervals varying from one to ten days, were killed and examined to determine the amount of lymphoid cell stimulation. Evidence of this activity was most marked after doses of 0.2 c. c. and began to appear forty-eight hours after the injection.

In order to measure the cancer resistance that might be thus engendered, grafts were made in the left groin ten days after the intraperitoneal injection of 0.2 c. c. of olive oil. Of the eighteen animals of this group, 40 per cent were resistant, as balanced against none

of the nineteen controls. Subsequent experiments along the same lines yielded results varying from 41 to 52.6 per cent immunity, as balanced against from 10 to 11.1 per cent in the controls. The indirect evidence associating the lymphoid cell with the mechanism of resistance is so strong as to leave little doubt that this cell has an important, if not the most important, rôle in bringing about the resistant state.

H. M. FEINBLATT.

ORCUTT, M. L., AND HOWE, P. E.: **Hemolytic Action of a Staphylococcus Due to a Fat-splitting Enzyme.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 409.

The hemolytic character of the staphylococcus has commonly been attributed to a toxic product of that organism, staphylolysin. In the routine examination of a sample of milk, the plate of a 1:100 dilution gave a pure culture of a nonhemolytic staphylococcus, while a 1:10 dilution yielded a pure culture of a meolytic staphylococcus. In the latter case, the deeper as well as the superficial colonies showed clear hemolytic zones. The above platings were repeated with an organism obtained from one of the deep colonies and the same results were obtained. These observations suggested that some constituent of the medium was responsible for the hemolysis.

Cultures were plated on plain blood-agar, blood-agar plus 0.1 c. c. of sterile fat-free milk, blood-agar plus 0.1 c. c. of whole milk, and blood-agar plus 0.02 c. c. of cream. Hemolysis occurred around the deep colonies only in the last two groups. These findings indicated that the effect of the dilution noted originally corresponded to a lowered fat content.

If the living culture or an etherized culture fluid was heated, neither of the resultant fluids was capable of causing hemolysis. When a living culture or an etherized culture of the staphylococcus was permitted to stand with cream or other fat for several hours and was then heated to 100° C. (212° F.) the resulting fluid was capable of producing hemolysis. It is justifiable, therefore, to attribute the hemolytic effects to the direct action of fatty acids or soaps which have been formed from the cream or fat by an extracellular enzyme elaborated by the staphylococcus.

H. M. FEINBLATT.



HAESSLER, H.: **The Effect of Food Diuresis on Hemoglobinuria.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 515.

In order to appear in the urine, hemoglobin must be free in the plasma in great excess, inasmuch as it is reabsorbed by the renal tubules. Like dextrose it is a threshold substance. Believing that free diuresis, by hastening the flow of fluid, should prevent reabsorption and thus favor the appearance of the pigment in the urine, the author instituted experiments to test the validity of this assumption.

A concentrated solution of hemoglobin was abruptly thrown into the circulation of rabbits and dogs, followed in some instances by a slower injection of salt solution. The amount of pigment introduced was slightly less than that required to produce hemoglobinuria without diuresis. At intervals the urine was collected by catheter. Diuresis regularly resulted in hemoglobinuria, whereas without it none occurred. As the tubules of the rabbit kidney are much less active in resorption than those of human beings, the present findings probably have no bearing on the presence of clinical hemoglobinuria. In pathological conditions that involve blood destruction, hemoglobin probably passes into the tubules much more often than it reaches the urine, being prevented therefrom by the resorptive activity of the tubular epithelium.

H. M. FEINBLATT.

McMASTER, P. D., ROUS, P., AND LARIMORE, L. C.: **Significance of the Hemosiderosis of Pernicious Anemia.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 521.

Owing to the selective siderosis of the liver parenchyma in pernicious anemia, it has been commonly assumed that pathological blood destruction takes place chiefly within the portal tributaries. To test the validity of this view is the purpose of the present paper.

Young rabbits received, six days out of every seven, subcutaneous injections of rabbit hemoglobin, in doses varying from one one hundred and fiftieth to one quarter of that normally possessed by the animal. The injection period ranged from 13 to 102 days. The principal complication noted was hemoglobinuria. The rabbits were killed at intervals and the distribution of the hemoglobin noted.

When a daily portion of less than one nineteenth of the approximate quantity of pigment in the circulation was employed, practically no siderosis was anywhere to be found. After slightly larger injections, long continued, the liver parenchyma exhibited a well-defined stippling with hemosiderin, which, like that of pernicious anemia, was most pronounced near the periphery of the lobules; whereas the kidneys were nonpigmented or negligibly so. With still more hemoglobin, the differences in the organs became less noteworthy and sometimes the kidney tubules showed an equal or greater siderosis. Always when large injections had been given, resulting in hemoglobinuria after but a few days, the epithelium of the renal tubules was heavily siderosed with coarse granules or lumps, and the hepatic parenchyma was by contrast negligibly pigmented. In the spleen, no marked siderosis was ever found.

These experiments plainly indicate that the liver has a special ability to remove free hemoglobin from the general circulation and render improbable the view that the selective hemosiderosis of the liver in pernicious anemia is evidence of blood destruction localized in the portal vein and its tributaries.

H. M. FEINBLATT.

LITTLE, R. B., AND ORCUTT, M. L.: **The Transmission of Agglutinins of *Bacillus Abortus* From Cow to Calf in the Colostrum.** *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 161.

Calves at birth, unfed, are without agglutinins to the bacillus abortus. The agglutinins towards *Bacillus abortus* found in the blood serum of new-born calves are obtained from the mother through the colostrum. Fetal blood contains little or no agglutinin, even when the maternal serum has a high content. The tabulated observations and experiments establish the fact that even when the blood and colostrum of the dam have a relatively high content of agglutinins towards *Bacillus abortus*, the blood of the new-born calf, with rare exceptions, is free from such antibodies until the animal has suckled and taken in the colostrum. The antibodies which appear in the calf's blood are absorbed from the digestive tract. The concentration of the agglutinins in the colostrum may exceed that of the blood at and immediately after parturition.

H. M. FEINBLATT.



DEKRUIF, P. H.: **Mutation of the Bacillus of Rabbit Septicemia.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 561.

Two varieties of microbe, designated as Types D and G, have been shown to exist in cultures of the rabbit septicemia bacillus. Type D is the organism invariably obtained from rabbits dying of the natural infection. Type G appears after artificial culture has been carried on for some time. Several strains of Type D were cultured from rabbits dead of bronchopneumonia, and, by means of the Barber method, a pure-line strain was obtained. The great amount of streaking, fishing, and diluting used in this method renders it practically certain that the strain was derived from a single organism. By merely allowing broth cultures of this strain to age, mutation to Type G resulted. These latter organisms showed no tendency to revert to Type D even when transplanted continuously in undiluted rabbit serum, a medium which was antagonistic to the original change. A high concentration of peptone in the medium renders the mutation more rapid.

H. M. FEINBLATT.

DU NOUY, P. L.: **Spontaneous Decrease of the Surface Tension of Serum I.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 575.

Over 3000 measurements of the surface tension of sera were made by the ring method. A new phenomenon, the spontaneous and rapid decrease of the surface tension of a serum in function of the time, was observed. After ten minutes the surface tension reached a constant value. Prolonged heat at 55° C. (131° F.) seemed to inhibit this phenomenon.

H. M. FEINBLATT.

NOGUCHI, H.: **Venereal Spirochetosis in American Rabbits.** *The Journal of Experimental Medicine*, March, 1922, xxxv, No. 3, p. 391.

In 1912 Ross described a disease of rabbits characterized by chancres, buboes, and ulcers on the genitals, mouth, and anus, etc.,

in which he found cell inclusions in the mononuclear leukocytes similar to those found in human syphilis. Bayon examined the genital lesions and found a spiral organism indistinguishable from the *Treponema pallidum*. Inoculation experiments with rabbits have been successful, incubation period varying from 3 to 6 weeks.

With these facts in mind, Noguchi, in June, 1921, examined the rabbits in stock at the Rockefeller Institute. Of fifty rabbits examined three females and two males were found to have lesions on the vulva, prepuce, and perineum. In November, 1921 six females with similar lesions were found among twenty rabbits just purchased in Pennsylvania.

An organism closely resembling the *Treponema pallidum* was recovered from the infected animals. The rabbit spirochete has the same morphologic features as the *Treponema pallidum*; it is a trifle thicker and longer than the average *pallidum*. The staining properties are the same. Spirochetal organisms could not be obtained from normal animals.

The histologic reactions are similar to but considerably less cellular than those occurring in typical primary syphilitic lesions. Repeated attempts to stain the spiral organism in the tissue by means of silver impregnation have been only partially successful. The organisms near the surface of the lesion took the stain. By careful teasing of the deeper layers and dark-field examination, spirochetes have been found to be present in all parts of the lesion.

The disease is transmissible to normal rabbits, in which the usual papular lesions can be readily reproduced in the genito-perineal region. In one instance transmission was successfully accomplished through the mating of an infected female with a normal male. Monkeys (*Macacus rhesus*) failed to show any lesion within a period of four months after inoculation.

The Wassermann reaction was uniformly negative in the animals with spontaneous lesions and in eighteen rabbits experimentally infected. After the administration of salvarsan the spirochetes disappeared within twenty-four hours and the lesions themselves within nine days. No recrudescence has occurred.

Noguchi concludes that this organism belongs to the genus *Treponema* and designates it as the *Treponema cuniculi*.

Striking photographs of the lesions and histologic and dark-field microphotographs are included with the article.



FENN, W. O.: Hemolysis of Erythrocytes in Contact With Glass. *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 271

In making counts of the numbers of red blood cells in various solutions without the use of fixatives, it was frequently observed that the cells began to hemolyze as soon as they settled out in the hemocytometer. Hemolysis was sometimes so rapid as to make the counts inaccurate.

It was found that washed erythrocytes hemolyze more rapidly when allowed to settle on a glass slide than when kept in suspension. This contact hemolysis is more marked on slightly soiled glass. The presence of as little as 0.1 per cent serum, particularly in alkaline solutions, inhibits such contact hemolysis. Erythrocytes are more sticky than normally in acid solutions and less sticky in alkaline solutions.

H. M. FEINBLATT.

JONES, F. S.: An Organism Resembling *Bacillus Actinoides* Isolated From Pneumonia Lungs of White Rats. *The Journal of Experimental Medicine*, March, 1922, xxxv, No. 3, p. 361.

Jones undertook the study of the bacteriology of rat pneumonia, and succeeded in obtaining from eleven afflicted white rats an organism closely resembling the *Bacillus actinoides*, a bacterium isolated from the pneumonic lungs of calves. The organism is Gram negative and appears in young cultures as a long, slender bacillus. In older cultures, on coagulated serum media, characteristic club-like capsular material is formed. On blood agar characteristic swellings appear at one or both ends of the rod.

Study of the pathogenic properties of this organism was instituted in a few instances and yielded negative results. White rats receiving subcutaneous injections of cultures suffered no ill effects, while a calf inoculated beneath the skin of the neck with a typical rat culture suffered only a mild local reaction.

In a few cases of rat pneumonia the author isolated the *Bacillus bronchisepticus*; in others, *streptothrices*. In many cases growth could not be obtained.

H. M. FEINBLATT.

WYNN, J.: Effect of Time Between Obtaining a Spinal Fluid and Making a Cell Count on the Result of the Count. *The Journal of Laboratory and Clinical Medicine*, February, 1922, vii, No. 5, p. 273.

The author concludes as follows: The cells in clear spinal fluid, collected in clean tubes and tightly stoppered, may in the absence of microscopic pellicle, sediment, or web be safely counted if thoroughly mixed at any time up to at least fifteen hours. If the spinal fluid is not clear or becomes clouded, the result of counts at different times are apt to vary. It is desirable but not necessary for fluids to be collected in sterile tubes. Whether the fluids are kept at room temperature or in the ice box seems to be of little consequence. In two cases of meningitis, the thorough mixing of small quantities (0.2 per cent gram for c. c.) of powdered sodium citrate with the fluids made it possible to duplicate the original cell counts (within the limit of technical error) at three and fifteen hour intervals. The procedure must be tried in a large series of cases before any conclusions are warranted regarding such citrating of fluids.

C. M. ANDERSON.

CUTLER, E. C.: The Relation of the Hypophysis to Antibody Production. *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 243.

A technic was devised which permitted a successful hypophysectomy on guinea pigs. Such animals, when immunized to bacillus typhosus, yielded a curve of agglutinin titer which ran parallel to those of normal and operated controls. Likewise, when the animals were immunized against hen red blood cells, there was no difference in the hemagglutinin and hemolysin titers, as compared with the controls. The feeding and intraperitoneal injection of whole pituitary gland extract likewise had no effect upon the agglutinin titer. These experiments indicate either that the hypophysis does not exercise an important part in the manufacture of typhoid agglutinins, hemagglutinins and hemolysins, or that the small amount of hypophyseal substance left by this operation was sufficient to maintain that functional influence.

H. M. FEINBLATT.



MIURA, M.: **The Effects of Thyroid, Thyroxin and Other Iodin Compounds, upon the Acetonitrile Tests.** *The Journal of Laboratory and Clinical Medicine*, March, 1922, vii, No. 6, p. 349.

The controversy over the question whether the thyroid exerts its influence in the animal body by secreting a substance which acts positively in certain processes of metabolism or whether its function is to neutralize poisons, led Hunt (1905) to study the value of the thyroid in increasing the resistance of mice to poisoning with acetonitrile. The author studied the activity of iodine in different samples of thyroid and in other iodine compounds, and gives the following conclusions:

Desiccated thyroid fed to mice protects them against poisoning with acetonitrile. The thyroid seems to be efficient in proportion to the amount of iodine contained. Potassium iodine and di-iodotyrosine gave no protection against acetonitrile in whatever quantity fed. Thyroxine when fed in such an amount that it furnished one-third the iodine provided by the most active thyroid fed, in some cases gave a greater degree of protection. Increasing the amount of thyroxine, decreased the protection against acetonitrile and caused loss of weight of the animals.

C. M. ANDERSON.

MIURA, M.: **The Effects of Various Foods, Food Factors and Chemical Agents upon the Resistance of Animals to Acetonitrile.** *The Journal of Laboratory and Clinical Medicine*, February, 1922, vii, No. 5, p. 267.

The correlation between the state of nutrition of animals and their resistance to poisons has claimed the attention of many investigators. It seemed desirable to repeat some of the experiments on the effects of poisons in the light of the newer advances in the science of nutrition.

The author concludes as follows: The experimental evidence shows that only in the cases of underfeeding, or feeding with iodine as the sole mineral, or feeding with oat starch and possibly of feeding with diets high in fats, was any alteration in the resistance to acetonitrile secured. It appears therefore that the susceptibility to

poisoning in mice with acetonitrile is not easily affected by changes in dietary composition within wide limits of quantity and especially of quality. Perhaps this may serve to emphasize the factor of safety possessed by the organism in its response to alteration of diet.

C. M. ANDERSON.

OLITSKY, P. K., AND GATES, F. L.: **Experimental Studies of the Nasopharyngeal Secretions From Influenza Patients. VII. Serological Reactions.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 553.

The authors developed a method by means of which the bacterium pneumosintes, an organism isolated from the nasopharyngeal secretions of influenza patients and from the lung tissues of rabbits inoculated with these secretions, may be cultivated in a collodion sac dialysate of the Smith-Noguchi medium. The ascitic fluid or dilute serum and the fresh tissue fragment are placed within the sac, which is surrounded by distilled water or physiological salt solution under a vaseline seal. This furnished an antigen suitable for serological tests. The injection of this antigen into rabbits resulted in the production of antibodies demonstrable by agglutination, precipitation, complement fixation, and phagocytic reactions. Four strains, three from the wave of 1918-1919 and one from that of 1920, showed identical antigenic characters.

H. M. FEINBLATT.

VAN DER HEYDE, H. C.: **On the Determination of Small Quantities of Atropin in Blood-serum.** *The Journal of Laboratory and Clinical Medicine*, February, 1922, vii, No. 5, p. 280.

Atropin has to be determined quantitatively in 1 c. c. of serum, containing maximally 5 mg. alkaloid. In test tubes of about 15 c. c. the proteins are precipitated with absolute alcohol. The precipitate is washed out several times with alcohol, and does not contain such a quantity of alkaloid as can be demonstrated. The alcoholic solution is evaporated. The residue is taken up in water. The watery solution is concentrated to a few cubic centimeters. A precipitate



principally consisting of fats is filtered off with a microfilter. The quantity of atropin in this watery solution is determined with the reagent of Mayer, potassium and mercuric iodid which appeared to be the least objectionable of sixty or more tested reagents. The dilution is determined in which this reagent is just capable to give a precipitate. From this the quantity of atropin can easily be calculated. Besides the experiment one should always make a control determination.

C. M. ANDERSON.

OLITSKY, P. K.. Experimental Studies on the Etiology of Typhus Fever. II. Survival of the Virus in Aerobic and Anaerobic Culture Media. *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 3, p. 115.

Typhus virus induces the typical experimental disease in guinea pigs but readily invites the invasion of a number of bacteria which have no etiological relationship with the infection. The present paper is one of a series designed to put the virus to a variety of experimental tests in order to study the nature of any inciting agent which may reside therein.

Various media under aerobic and anaerobic conditions were inoculated with the virus present in the blood of a guinea pig reacting to experimental typhus fever. These experiments show that the typhus virus, as it is found in the blood of guinea pigs reacting to the experimental disease, if kept at 37° C. (98.6° F.) in different media from which oxygen is excluded by a petrolatum seal, tends to die off rapidly in twenty-four to forty-eight hours. On the other hand, the period of survival is prolonged to five days when the same media have free access to atmospheric oxygen.

In the Smith-Noguchi tissue, ascitic fluid, sealed medium in which bacteria resembling Plotz' bacilli grow luxuriantly and remain viable for several weeks, the typhus virus does not increase in virulence and even dies after twenty-four hours. This evidence supports the conclusion that the *Bacillus typhi exanthematici* of Plotz is not identical with the active agent of typhus fever.

H. M. FEINBLATT.

OLITSKY, P. K.: Experimental Studies on the Etiology of Typhus Fever. III. Filtration Experiments. *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 121.

The experiments described in this paper relate to two points: First, the supposed intracellular nature of the inciting agent, and second, the filterability of the virus. In all, fourteen experiments were made with the infected spleen and brain derived from guinea pigs at the height of the experimental infection. In all instances, after such measures as repeated freezing and thawing, freezing and desiccating, crushing in a mechanical tissue crusher, and grinding with sand, the virus remained as actively infective as in the same tissue not subjected to the disintegrating influences. The possibility exists, therefore, of an extracellular condition of the typhus virus.

Fourteen attempts to filter through Berkefeld V and N candles the virus contained in the disintegrated tissue have all resulted in failure. In none of them was there induced either typical experimental typhus fever or immunity.

H. M. FEINBLATT.

OLITSKY, P. K.: Experimental Studies on the Etiology of Typhus Fever. IV. Immunizing and Toxic Agents Found Occasionally in Filtrates of Typhus-infected Tissues. *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 469.

In a previous paper, the author proved that the typhus virus present in the tissues of guinea pigs at the height of their reaction to inoculation is not filterable through tested Berkefeld filters. Nevertheless such filtrates, though free from a living, multiplying agent, can occasionally induce in guinea pigs not only the typical lesions of the disease, but also immunity to later injections of the virus.

Of twenty guinea pigs inoculated with filtrates, fifteen revealed no disturbance of temperature; five of the twenty, from two to five days after inoculation, showed pyrexia above 104° F. (40° C.). At autopsy four animals showed the characteristic lesions of the experimental disease. In each instance the blood of the animals inoculated with the filtrate failed to transmit the disease to other guinea pigs.



Of the nine guinea pigs tested with respect to the immunity produced by the injection of a filtrate, six showed no immunity, two partial immunity, and one complete immunity.

H. M. FEINBLATT.

PAPPENHEIMER, A. M., McCANN, G. F., AND ZUCKER, T. F.: **Experimental Rickets in Rats. IV. The Effect of Varying the Inorganic Constituents of a Rickets-producing Diet.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 421.

It has been shown that rickets can be produced in rats by a diet composed of patent flour, calcium lactate, sodium chlorid, and ferric citrate, and that it can be prevented by the substitution of 0.4 per cent basic potassium phosphate for an equal volume of calcium lactate in the diet. By feeding rats with a diet containing sufficient calcium but deficient in phosphates, the authors unfailingly produced typical rachitic lesions; when phosphorus was added in adequate amount (75 mg. of phosphorus per 100 grams of diet) the development of rickets was invariably prevented. Equally striking was the observation that lesions resembling those of rickets also followed the administration of a diet deficient in calcium but containing an adequate or excessive amount of phosphate. A diet defective in both calcium and phosphate induced a typical rickets. All of the animals used in these experiments were protected from sunlight, as it has been shown that direct exposure to sunlight gives complete protection in phosphorus-low diets.

H. M. FEINBLATT.

PAPPENHEIMER, A. M., McCANN, G. F., AND ZUCKER, T. F.: **Experimental Rickets in Rats. V. The Effect of Varying the Organic Constituents of a Rickets-producing Diet.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 447.

Casein phosphorus, when added to a ricket-producing diet in amount equivalent to a protective dose of basic potassium phosphate, did not completely prevent the development of rickets in rats. Lecithin, on the other hand, gave protection equivalent to its phosphorus

content. Yeast likewise protects, but only when given in sufficient amount to provide ample phosphorus. Neither egg albumen nor butter or butter fat conferred any immunity. The addition of meat adds an abundance of phosphorus and thereby protects. A diet has been found which contains the necessary food elements for approximately normal growth, and in which the only known deficiency is phosphorus. This diet leads regularly to the production of rickets.

The results of these experiments indicate that the protective influence of certain organic foods is no greater than an equivalent amount of inorganic phosphorus; that vitamin A in the form of butter neither prevents nor cures rickets; and that vitamin B, as found in yeast, is protective only in proportion as it provides phosphorus.

H. M. FEINBLATT.

NYE, R. N.: **Studies on the Pneumonic Exudate. V. The Relation of Pneumonic Lung Protease Activity to Hydrogen-ion Concentration, and a Consideration of the Origin of the Enzyme.** *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 153.

Nye endeavored to determine quantitatively the digestive action of pneumonic exudate on fibrin and to ascertain the relation of the hydrogen ion concentration to the activity of the enzyme. Horse fibrin was incubated with cellular suspensions from normal and pneumonic lungs respectively under different degrees of hydrogen ion concentration. The results clearly showed that there is present in pneumonic lungs an enzyme, or enzymes, capable of digesting horse fibrin. Similar results were obtained with cellular suspensions from the consolidated lungs of lobar pneumonias other than those caused by Type 1 pneumococcus. In the range of reactions chosen as physiological possibilities the enzyme shows the greatest activity at the most alkaline end of the scale (pH 8.0). At this hydrogen ion concentration it was able to convert 46 per cent of the fibrin originally present to a non-coagulable form after five days' incubation. The Cellular suspension controls of normal lung showed an appreciable digestion of fibrin at (pH 4.0), and practically no increase in non-coagulable nitrogen in the less acid media.

The protease of pneumonic lung cellular suspensions is derived



chiefly from the leukocytes of the exudate. This enzyme is most active in a slightly alkaline medium (pH 8.0). Less important sources of the protease are the pneumococci and the lung tissue.

H. M. FEINBLATT.

CHESNEY, A. M.: The Use of Phenol Red and Brom-Cresol Purple as Indicators in the Bacteriological Examination of Stools. *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 181.

Numerous media for the isolation from the stools of organisms belonging to the typhoid-dysentery group have already been proposed. Studies were made to determine the availability of phenol red and brom-cresol purple for this purpose. It was found that either of these dyes may be used as an indicator in the preparation of lactose agar plates for the isolation of members of the typhoid-dysentery group from the stools. Of the two, brom-cresol purple gives sharper differentiation and is to be preferred. These indicators exercise no restraining influence upon the growth of typhoid, paratyphoid, or dysentery bacilli.

In the case of brom-cresol purple the optimum conditions are: a 0.04 per cent aqueous solution of the indicator (which may be sterilized by autoclaving) for every 100 c. c. of agar. The most favorable reaction of the agar is a hydrogen ion concentration represented by a pH of 7.2 to 7.4.

In the case of phenol red, the optimum conditions are: 10 c. c. of 5 to 8 c. c. of a 0.04 aqueous solution of the indicator (which may be sterilized by autoclaving) for every 100 c. c. of agar. The most favorable reaction of the agar is a hydrogen ion concentration represented by a pH of 7.6 to 7.8.

H. M. FEINBLATT.

GRATIA, A.: The Twort-D'Herelle Phenomenon. II. Lysis and Microbic Variation. *The Journal of Experimental Medicine*, March, 1922, xxxv, No. 3, p. 287.

By merely allowing it to age, a culture of bacillus coli can be dissociated into two types. The one, Type S, is very susceptible to desiccation.

cation and transmissible lysis; the other, Type O, is more resistant. The organisms are distinguished also by difference in other properties, namely motility and virulence.

Bordet and Ciuca made three successive isolations from a strain given to them by d'Hérelle, and it was from this source that the author's culture was derived. Besides the general properties of *Bacillus coli*, this strain, called *Bacillus coli* O, has the following special attributes: Large, flat, grape leaf-shaped, fluorescent colonies on agar plates, absence of motility, and great sensitiveness to lytic agents.

If a broth culture of *Bacillus coli* be almost completely dissolved by a lytic agent, the few survivors, when transplanted on agar slant, acquire new properties. They assume a mucoid growth. They now resist lytic substances and furthermore become capable of inducing dissolution in normal cultures of *Bacillus coli*. They are also less phagocytatable and more virulent.

Experiments are adduced to show that this modified coli is a very heterogeneous group. By plating the original *Bacillus coli* with increasing quantities of the lytic agent, various types could be differentiated. A few of the organisms were able to resist concentrated lytic agents, and they gave round, healthy, non-mucoid, non-lysogenic colonies. Those which could resist only dilute lytic agents, yielded irregular, mucoid, lysogenic colonies. All of the above strains are non-motile and fluorescent.

On the basis of varying resistance to the lytic agent, lysogenic properties, and degree of mucoid growth, the author has been enabled to differentiate eleven forms, all derived from a single strain of *Bacillus coli* and possessing the general characteristics of that organism.

Nine of these forms were submitted to antisera prepared with three different types. While seven of these strains were agglutinated by any of the three sera, only the original *Bacillus coli* and one other form failed to be agglutinated even by the corresponding serum. The antisera were obtained from a rabbit immunized against the particular strain.

The author furnishes a table differentiating the eleven members of this group by means of the following traits: Resistance to lytic agents, motility, mucoid growth, ability to yield mucoid growth, fluorescence, and sero-agglutination.

Gratia discusses the nature of these variations. He calls atten-



tion to the fact that all of the strains still possess the specific properties of the *Bacillus coli*, that the variations never extend outside of the normal range of the species, and that the individuality once acquired is maintained after several months. It is out of the question to say that the eleven types coexisted in the original strain, as that would necessitate the assumption that each of the eleven types had come through the three successive isolations of Bordet and Ciuea before the present investigations were begun. The author concludes that the different types observed are the result of changes occurring in the original *Bacillus coli* in the course of these studies.

H. M. FEINBLATT.

KLIGLER, I. J., AND ROBERTSON, O. H.: **The Cultivation and Biological Characteristics of *Spirocheta Obermeieri* (Recurrentis).** *The Journal of Experimental Medicine*, March, 1922, xxxv No. 3, p. 303.

The spirochetes of relapsing fever were first cultivated by Noguchi in 1912. He employed a culture medium consisting of ascitic fluid to which a fragment of fresh sterile rabbit kidney had been added. The culture fluid was inoculated with infected rat blood and covered with a layer of paraffin oil. The maximum growth occurred between the fourth and sixth days, at which period subcultures were made. Plotz successfully applied this technic in cultivating the spirochetes from the blood of patients.

In cultivating the *Spirocheta obermeieri* the authors found the method of Noguchi most satisfactory, but in their hands the results were inconstant. Occasionally a good initial growth was obtained, but it was not always possible to carry the culture to a second generation. Frequently in the same medium either no growth occurred or an abundant growth was rapidly terminated by degeneration at the end of the third or fourth day. These difficulties suggested to the authors the desirability of analyzing more fully the factors in the growth requirements of the organisms. The *Spirocheta obermeieri* was the type used in these experiments.

As a result of their investigations the authors were enabled to perfect a method which permitted them to cultivate the organisms consistently from the blood of infected mice and rats, to maintain

the viability of cultures for periods of at least three to seven weeks, and to carry them on in successive subcultures by transplanting at intervals of two to four weeks.

This method is essentially the same as the Noguchi technic for the cultivation of the *Leptospira*, but the physicochemical factors are emphasized. Ascitic fluid, horse or rabbit serum may be used. As these fluids become progressively more alkaline on exposure to the air, it is essential to keep the hydrogen ion concentration at the optimum of pH 7.2 to 7.4. A balanced reaction can be secured by adding one per cent peptone broth or egg albumin as buffer, and covering the culture with a layer of oil. As the *Spirocheta obermeieri* is a strict aërobe, the oil layer should not exceed 1.5 cm. in depth.

H. M. FEINBLATT.

LEWIS, M. R.: **The Importance of Dextrose in the Medium of Tissue Cultures.** *The Journal of Experimental Medicine*, March, 1922, xxxv, No. 3, p. 317.

Because of the importance of sugar metabolism in sustaining animal life, it seemed to Lewis to be of moment to ascertain what influence dextrose might have upon tissue cultures. For this investigation over 500 cultures of the connective tissue of chick embryos were prepared in media from which dextrose had been omitted or which contained from 0.25 to 5 per cent of that substance. The effect of the lack of dextrose upon the cells of tissue cultures was definite and pronounced, and inevitably resulted in the production of vacuoles. Two hundred and twelve cultures were prepared in various media lacking dextrose, and in every instance vacuoles were formed, after which the cells degenerated rapidly. On the other hand, media such as white of egg, amniotic fluid, and allantoic fluid, otherwise unsatisfactory for cultures, became favorable for growth when a small amount of dextrose was added. In Locke's solution without dextrose the cells became full of vacuoles and died within a few days, while in the same solution with dextrose they survived for many days, depending upon the amount of this substance in the medium. Cells in solutions rich in protein but lacking in dextrose died much sooner than those in simple salt solution containing dextrose.



Cultures to which 0.5, 0.75, and 1 per cent dextrose had been added showed extensive growth, full of cell division, and survived from two to four weeks without forming vacuoles. When larger quantities (2 to 5 per cent) of dextrose were added growth sometimes was not so extensive, and in most cases it did not survive so long, but these cells never formed vacuoles. These latter results were influenced by the changes in the hydrogen ion concentration of the medium.

H. M. FEINBLATT.

FISCHER, A.: A Three Months Old Strain of Epithelium. *The Journal of Experimental Medicine*, March, 1922, xxxv, No. 3, p. 367.

The purpose of the experiments described in this paper was to obtain a pure strain of epithelium and to keep it permanently in vitro, as has been done with connective tissue. Epithelium had already been grown in vitro for short periods of time, and, in cold-blooded animals, cultivated for longer periods. Carrel's attempts to obtain a permanent strain from the skin of chick embryos were unsuccessful, because, after two or three weeks, the cultures were invaded by fibroblasts. The fibroblastic contamination was due to the difficulty of obtaining culture epithelium completely free from connective tissue cells. Although the cultivation of epithelium appeared to be more difficult than that of connective tissue, it seemed probable that, if epithelium could be obtained free from connective tissue cells, it could be kept in pure culture indefinitely.

The strain of epithelium described in this article was obtained from chick embryo eyes. Only a few cultures from the lens produced pure epithelium. After repeating the explantation of different tissues from the eye it appeared that only a certain kind of supposed lens cultures produced a pure growth of epithelium, namely the peripheral portion, to which a little brim of iris epithelium is attached. The lens tissue itself did not grow at all, but the little brim of iris which sticks to the lens when it is enucleated grew out apparently as pure epithelium. After three months' cultivation in vitro, it still looks as pure as when it was observed on the first day.

The optimum condition under which embryonic cells grow in vitro is on the free surface of the plasma clot under a film of embryon-

ic tissue juice. As a rule, the growth takes place in one delicate, continuous layer on the surface of the clot. The epithelial cells do not differentiate. Although the strain is three months old, they grow as a pavement membrane and have kept their epithelial characteristics.

The article is accompanied by beautiful microphotographs of the culture, showing characteristic pure epithelium. Numerous cells in mitosis and different stages of amitotic cell division are apparent in these illustrations. The cells keep close together and grow in pavement formation.

H. M. FEINBLATT.

BANTING, F. G., AND BEST, C. H.: **The Internal Secretion of the Pancreas.** *The Journal of Laboratory and Clinical Medicine*, February, 1922, vii, No. 5, p. 251.

The authors give a resumé of some of the outstanding articles which tend to attribute to the isles of Langerhans the control of carbohydrate metabolism. From their resumé they make the following conclusions: That the secretions produced by the acinous cells of the pancreas are in no way connected with carbohydrate utilization; that all injections of whole gland extracts have been futile as a therapeutic measure in defects of carbohydrate utilization, and that the islands of Langerhans are essential in the control of carbohydrate metabolism. According to Macleod there are two possible mechanisms by which the islets might accomplish this control: (1) The blood might be modified while passing through the islet tissue, i. e., the islets might be detoxicating stations; and (2) the islets might produce the internal secretion.

The authors present several experiments on dogs which they think give convincing evidence that it is this latter mechanism which is in operation.

From their experiments they give the following conclusions: Intravenous injections of extract from dog's pancreas, removed from seven to ten weeks after ligation of the ducts, invariably exercise a reducing influence upon the percentage sugar of the blood and the amount of sugar excreted in the urine. Rectal injections are not effective. The extent and duration of the reduction varies directly



with the amount of extract injected. Pancreatic juice destroys the active principle of the extract. That the reducing action is not a dilution phenomenon is indicated by the following facts: (1) hemoglobin estimations before and after administration of extract are identical; (2) injection of large quantities of saline do not effect the blood sugar. Extract made 0.1 per cent acid is effective in lowering the blood sugar. The presence of extract enables a diabetic animal to retain a much greater percentage of injected sugar than it would otherwise. Extract prepared in neutral saline and kept in cold storage retains its potency for at least seven days. Boiled extracts has no effect on the reduction of blood sugar.

C. M. ANDERSON.

HAESSLER, H., ROUS, P., BROUN, G. O., AND BROWN, G. O.: **The Renal Elimination of Bilirubin.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 533.

Since it has long been admitted that jaundice may inflict severe injury upon the kidneys and since the elimination of bilirubin would seem to be of obvious importance as a therapeutic measure, it appeared desirable to test the efficacy of the different methods of inducing diuresis. The large bile duct was tied, in a series of dogs, and the accumulation of bilirubin was measured in the blood as well as in the twenty-four hour urine output. After ten or more days of obstruction had elapsed and the icterus had reached a relatively constant level, the study of the effects of the intravenous injection of fluids was begun. Warm 0.9 per cent sodium chlorid solution was introduced into the saphenous vein at a measured rate of from 0.17 to 0.7 c. c. per kilo per minute for three hours or more, during which time the urine was collected by catheter and its pigment content determined. The diuresis consequent upon the injection of this salt solution regularly increased the output of bile pigment greatly. The amount per c. c. of urine, on the other hand, was much lessened. The intensity of the bilirubinemia remained practically unaffected.

Copious diuresis induced by forcing water by mouth yielded no increase whatsoever of the twenty-four hour elimination of bilirubin. Observations were made on two men with catarrhal jaundice in whom periods of diuresis from forced fluid by mouth were alternated with

periods of restricted water intake. The marked variations that were induced in daily output of urine through forcing water by mouth had no effect on the rate at which the jaundice diminished from day to day as determined by the diazo reaction of the blood plasma; and the content of the twenty-four hour urine in bilirubin was no greater when the voidings amounted to several liters than when only half of this quantity was passed.

The passage of bile pigment into the kidney cells during jaundice is evidenced by the presence in the freshly voided urine of desquamated renal elements specifically stained with bilirubin. This finding is of clinical importance, indicating the degree of renal damage.

H. M. FEINBLATT.

AUER, J.: **Experimental Generalized Analgesia After Exposure to Some War Gases.** *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 97.

Pain perception can be reduced to an astonishingly low level as a result of exposure to the war gases, dimethylsulfate and chloropicrin. In many cases this analgesia is so profound that a laparotomy can be performed without any indication of pain and without markedly influencing the blood-pressure. The results of numerous experiments justify the statement that these two war gases strikingly reduce pain perception in cats under conditions to be described.

It had been observed that many soldiers gassed with phosgene and chlorine exhibited a general or localized loss of pain perception. In some, the analgesia involved the skin of the whole body, while in others it was localized to the forehead, scalp, hands, or feet.

Cats were gassed with dimethylsulfate or chloropicrin in such concentration that death generally resulted within four days. As a result, a state of analgesia was established within a few hours, reaching its maximum in twenty-four hours. Stimuli ordinarily very painful, such as sharp pressure upon the pinna, the nasal septum, the skin of the body, or the tail elicited no evidence of pain or resentment on the part of the animal. Furthermore laparotomy could be performed and loops of intestine delivered from the wound without provoking more than a gentle rolling motion. Stretching of a mixed nerve or electrical stimulation of an afferent trunk, however, caused manifestations of pain and raised the blood-pressure.



With dimethylsulfate, analgesia may persist for six months; but with chloropicrin, normal sensitiveness has been observed seven days after gassing.

The author attributes this analgesia to a general low-grade tissue asphyxia, which is chiefly of pulmonic origin. He believes that the higher centers are so altered after gassing that they are no longer able to perceive pain stimuli as such.

This analgesia may be of practical importance in the human subject. For example, in gassed soldiers, where surgical intervention is required, little or no anesthetic may be necessary.

H. M. FEINBLATT.

McMASTER, P. D. Do Species Lacking a Gall-Bladder Possess Its Functional Equivalent? *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 127.

Certain closely related species possess a gall-bladder, while others do not. For example, it is present in the mouse, but absent in the rat. The question arises whether in those species lacking a gall-bladder the bile ducts take up the functions of that organ.

One obvious function of the gall-bladder, that of a reservoir, cannot be assumed in the rat by the ducts, as is indicated by the small size of these channels and by the recent observation of Mann that the tonus of the sphincter of Oddi is almost negligible in the rat, in contradistinction to animals which possess a gall-bladder. Another function of the gall-bladder is to concentrate the secretion greatly and to thicken it with mucus, whereas the ducts by contrast tend to dilute it, though to a negligible degree, with a thin product of their own. By ligation experiments on rats and mice, the author endeavored to determine whether in rats the concentration function is located somewhere in the duct wall.

The quantitative determination of the bile pigment was used as the index to the degree of concentration. Bladder bile of the mouse was regularly found to be more concentrated than that collected from the common duct of the same animal. The bile collected during stasis showed a great increase in pigment content. In the rat, on the other hand, stasis bile never became more concentrated in pigment than the normal. The bile of the rat, however, while it undergoes

no condensation of bulk after leaving the liver, contains on the average eight times as much pigment as does the liver bile of the mouse.

The gall-bladder, then, is not only absent from the rat in form, but in at least two of its important functions.

H. M. FEINBLATT.

ROBERTSON, O. H., AND ROUS, P.: Sources of the Antibodies Developing After Repeated Transfusion. *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 141.

After frequently repeated injections of alien blood, there is a gradual decrease of beneficial action and sometimes positive injury results. This change is due to a diminished tolerance to the donor's blood on the part of the recipient.

In normal animals blood is destroyed more rapidly after repeated transfusions than at first. Recent observations indicate that circulating antibodies are to a considerable extent responsible for this blood destruction. It has been found that repeated transfusions of compatible blood in rabbits are often followed by the appearance in the recipient's plasma of hemagglutinins so strong that the red blood cells come together into a firm mass practically as soon as the blood has been shed, while, furthermore, a fulminant destruction of corpuscles may take place in vivo with resultant anemia. The elements destroyed are the alien cells, which little by little have taken the place of cells proper to the host.

The hemagglutinins just mentioned are in the immediate sense autoantibodies. They clump practically all of the circulating erythrocytes, are especially effective at low temperatures, and persist in high titer for months after the transfusions have been discontinued and after recovery from the severe intercurrent anemia which may develop soon after their appearance. In human beings true autohemagglutinins have repeatedly been observed in association with anemia, of obscure origin; while autohemolysins are known to bear an important relation to paroxysmal hemoglobinuria.

Rabbits were transfused from different compatible donors in succession, receiving six days in every seven ten c. c. of citrated blood. In about half of the animals auto-agglutinins never developed; in the other individuals they appeared early, as a rule after five or ten trans-



fusions. When some three or four more had been given, they were well marked. The shed blood of the rabbits, when examined at room temperature, now showed prior to clotting a massive clumping of the red cells, due to the presence in the plasma of true hemagglutinins.

Experiments are reported which show that the remarkable clumping of the cells in the shed blood of repeatedly transfused rabbits is due in most instances to the action of iso-agglutinins developing in the recipient and effective upon the alien elements circulating among its own cells. Occasionally antibodies develop in the donor bloods during the period of transfusion, but they are so weak as to be negligible.

Agglutinins exist within the red blood cells of rabbits. They are readily demonstrable in watery extracts of the dried corpuscles. Whether similar agglutinins ever exist within human cells remains to be determined.

H. M. FEINBLATT.

HAMMETT, F. S., NOWREY, J. E., AND MULLER, J. H.: **The Erythropoietic Action of Germanium Dioxid.** *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 173.

Because germanium occupies a place on the periodic list next to that of arsenic and in many of its reactions resembles this latter element, experiments were performed to study the effects of germanium upon the erythropoietic system. Two preliminary determinations, seven days apart, were made of the red and white blood-cell count, in order to establish their normal values. Injections of a 0.4 per cent sterile solution of germanium dioxid were then given to four lots of mature male and female albino rats. Two of these groups received in four doses at intervals of four days a total of 6.6 mg. of the oxid per kilo of body weight; the other two lots were given in three doses at like intervals a total of 45 mg. of the compound per kilo of body weight. In each group there was one rat which served as a control and which did not receive any germanium. Weekly counts were made upon all of the rats during the progress of the investigation, which lasted for four weeks, during three of which the treated animals were under the influence of germanium.

The observations conclusively demonstrate that germanium dioxid causes a very marked increase in the number of red cells per

cubic millimeter of blood. An increase in the erythrocyte count of from one to nearly five million cells occurred in every one of the eleven rats which had injections of this compound. No such response was exhibited by the control rats. Moreover, germanium dioxid does not produce an accompanying leukemia.

There was no indication that the larger doses of germanium exerted a greater stimulating effect upon the erythropoietic tissue with resultant erythrocythemia than the smaller doses. The effect is quick in making its appearance, the rise in the red cell count occurring within a week and after but two injections of the dioxid. Indications were obtained that germanium tends to increase the coagulability of the blood. Autopsy showed changes in the color of the liver and the bone marrow of the treated animals.

The combination of the fact that germanium dioxid is nontoxic and noncorrosive with the fact that it produces such a marked increase in the number of erythrocytes in the circulation of the healthy rat gives us the hope that this compound has a specific stimulating effect upon the erythropoietic tissue and will be found of clinical value.

H. M. FEINBLATT.

HAMMET, F. S., AND NOWREY, J. E.: The Erythropoietic Action of Germanium Dioxid. II. The Source of the Erythrocythemia Produced by Germanium Dioxid in the Albino Rat. *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 507.

Having demonstrated in a preceding paper that germanium dioxid is nontoxic to the albino rat and is capable of increasing the red blood-cell count from one to five millions, and having found gross color changes in the bone marrow, liver, and spleen of these animals, the authors proceeded to inquire still further into the source of this erythrocythemia.

A histological comparison was made of the liver, spleen, bone marrow, circulating young erythrocytes, and differential count in mature male and female albino rats receiving germanium dioxid with their litter controls not receiving this compound. The sections of the livers of the germanium treated animals showed no evidence of the resumption by this organ of its original erythropoietic function.



There was present, however, in most cases, an apparent dilatation of the hepatic capillaries, in which there were many erythrocytes, but no nucleated red cells. This relative engorgement of the liver explains the gross changes at autopsy. The spleen likewise showed no evidence of resumption of erythropoiesis, but there seemed to be a dense concentration of cells in the Malpighian corpuscles.

In the sections of the bone marrow of the germanium-treated rats there was ample evidence that the compound had produced a stimulation in formation of new red cells in that tissue over and above that present in the marrow of the controls. Not only were there more centers where the nucleated erythrocytes were in evidence, but there were more of these types of cells per unit area.

These experiments demonstrate conclusively that the erythrocythemia produced by the injection of germanium dioxid solution takes its origin from a stimulation of erythrocyte formation in the bone marrow.

H. M. FEINBLATT.

TONGS, M. S.: Effects of *Pneumococcus* Type I on Leukocytes and Hemopoietic Organs. *The Journal of Infectious Diseases*, January, 1922, xxx, No. 3, p. 323.

The blood changes in croupous pneumonia have been much discussed and the occurrence of leukopenia in certain fatal cases has made it doubtful whether negative chemotaxis is the cause of leukopenia in general. Careful study of the blood and hemopoietic organs seems indicated.

In the experiments reported, rabbits were inoculated intravenously or intratracheally with virulent or non-virulent pneumococcus of Type I in 24 hour dextrose-broth cultures. One series of rabbits was inoculated with the filtrate of a very virulent pneumococcus culture, after being passed through a Massén filter.

The author concludes that the leukocytic reaction in rabbits infected with pneumococcus Type I is somewhat dependent on the virulence of the organisms, a low virulence producing leukocytosis and a high virulence producing leukopenia. The leukopenia seems to be brought about by degeneration of leukocytes and of cells in the hemopoietic organs. This degeneration seems to be due to the toxic action of the pneumococcus.

After an intraperitoneal inoculation of guinea-pigs with virulent and nonvirulent pneumococci, the leukocytes, as a rule, show phagocytosis. In certain instances the failure of leukocytes to take up highly virulent pneumococci seems to be due to intoxication of leukocytes as evidenced by degenerative changes. It seems that virulent pneumococci also produce a chemotactic substance, as although the leukocytes fail to ingest virulent cocci they usually become surrounded by them.

M. M. BANOWITCH.

DUVAL, C. W., AND D'AUNOY, R.: Studies Upon Experimental Measles. L. The Effects of the Virus of Measles upon the Guinea Pig. *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 257.

It having already been demonstrated that the filterable virus of measles present in the circulating blood is capable of infecting monkeys, it appeared desirable to ascertain what effect this virus might have upon guinea pig. The animals received intracardiac injections of one to 2 c. c. of human blood from cases of measles. A reaction could be produced only during a certain stage of the disease which corresponded roughly with the eruptive phase. Thirty-six hours before the eruption and twenty-four hours after the temperature was normal, the human blood gave no reaction in this animal.

Three striking alterations occurred constantly in these animals; namely, pyrexia, leukopenia, and nephritis. The elevation in temperature usually began about the ninth day after inoculation, was abrupt, and usually reached a height of 104 degrees F. or more. At this height it remained, with slight fluctuations, for three or four days, and then subsided by lysis. In all cases there was at least a moderate leukopenia, sometimes reaching as low as 3600 cells per cm. The average time for the appearance of this cellular change was nine or ten days after inoculation. Leukocyte depression was most marked from the twelfth to the fourteenth days. The most striking change observed at autopsy was gross evidence of nephritis. The kidneys were swollen, cloudy, and congested. Petechiæ and blood extravasations in the cortex were sometimes found. Microscopically the kidney sections revealed evidence of acute hemorrhagic



nephritis, the hemorrhages for the most part being related to the capillaries of the tufts and the tubules of the pyramids. In the most pronounced cases practically all of the glomeruli were affected. The typical exanthematous signs of human measles were not observed in any of the animals.

Guinea pigs receiving normal human blood intracardially did not react with pyrexia and leukopenia. Those animals which recovered were found not to be susceptible to reinfection as late as three months after recovery. Guinea pigs could be inoculated from infected animals for as many as eight generations.

H. M. FEINBLATT.

OLMSTED, W. H., AND GAY, L. P.: Study of Blood Sugar Curves Following a Standardized Glucose Meal. *Archives of Internal Medicine*, March, 1922, xxix, No. 3, p. 384.

A report is offered on the study of over two hundred blood sugar curves following the ingestion of a glucose meal. The authors advocate the use of Janney's standard meal, which consists of 1.75 grams of glucose for every kilo of body weight, as it is obvious that the commonly used 100 gram meal must give different results with a 100 and a 200 pound individual. The sugar is administered in a 40 per cent solution of water and lemon juice. The importance of determining the three hour blood sugar as well as the fasting, the one- and the two-hour blood sugars is emphasized.

In a miscellaneous group of cases the authors found rather a sustained curve in a number of cases of focal infection and in arthritis cases which had recently been treated with foreign protein, but not in arthritis cases not so treated. They believe the low carbohydrate diet for arthritis is irrational and have been disappointed in its use. Some cases of carcinoma of the gastro-intestinal tract with metastases showed the same type of curve. Cases without metastases did not.

The curves illustrating the course of events in the case of hyperthyroidism seem to show a high initial rise, some fall at the end of two hours and, practically, a normal blood sugar at the end of three hours. The authors point out that in the case with the highest basal metabolism the blood sugar curve was low, due no doubt to the rapid burning up of the sugar, while the highest blood sugar curve was found

in a patient with a much lower basal metabolism. The rapid utilization of sugar in these cases indicates the liberal use of carbohydrates in the diet in order to spare the body proteins, while the tendency to hyperglycemia may be met by administering the carbohydrate in small doses frequently repeated.

Cases of hypothyroidism showed a tendency to a low sugar curve after the glucose meal. This is probably due to increased sugar storage.

In mild diabetes the rise in blood sugar was immediate and sustained, commonly remaining above 300 at the end of three hours. Two cases of so-called "renal diabetes", which showed glycosuria with normal fasting blood sugar values, both gave subnormal curves.

In a number of cases diagnosed as hypopituitarism, dyspituitarism and polyglandular syndrome, a low type of curve was observed. The authors believe that in this type of case the factor of delayed absorption of the sugar from the gastro-intestinal tract may play a part. Delayed water absorption was observed in some of these cases.

A number of tests were made in patients suffering from disturbed mental states. The authors state that the outstanding fact from their investigation is that no prediction can be made as to the nature of the curve from diagnosis alone. However, they found that most hysterical individuals gave a normal type of curve, that hypochondriacs and manic depressive patients show, in the majority of cases, high curves, while neurasthenics and dementipraecox patients may show any type of curve.

T. HOWARD.

GRUND, M.: **Susceptibility of Rabbits to the Virus of Measles.** *The Journal of Infectious Diseases*, January, 1922, xxx, No. 1, p. 86.

This investigation was undertaken to determine whether or not the inoculation of nasal secretions from patients with measles would produce definite and characteristic symptoms in rabbits.

The nasopharynx of patients in the early eruptive or pre-eruption stage of measles was irrigated with 30 to 50 c. c. normal salt solution. Cultures were made from the material obtained on blood-vitamineagar to establish the prevalent types of bacteria.

From 5 to 10 c. c. of the washings were injected into the trachea of rabbits, the animals being slightly anesthetized. Unfiltered wash-



ings were used in most cases. The majority of rabbits gave a certain reaction. In susceptible animals the incubation period varied between two and seven days. The least reliable and constant symptom seems to be the exanthem; while present in about 20 per cent of the cases, only 5 animals showed what might be called good typical Koplik spots.

The temperature curve is also not at all characteristic; in very few of the animals did the temperature go above 103° F. In some cases a certain relationship appeared between the temperature curve, the cutaneous symptoms and the leukocyte count; however, it was far from constant and the fluctuations noted in daily blood counts made for one week before inoculation do not make a "leukopenia" seem a very dependable diagnostic sign in rabbits.

In 70 per cent of the animals, conjunctivitis and inflammation of the upper respiratory passages occurred in varying degrees of severity. Seventy-five per cent of the rabbits showed some form of cutaneous eruption, either a diffuse punctate erythema, or, sometimes following the erythema, sometimes occurring without it, a maculopapular rash which faded in from 2 to 4 days, and left pigmentation persisting until desquamation began.

Desquamation, either branny or flaky, occurred in all but four animals after the rash and was noted three times in cases where no rash had been noted. Three animals with marked erythema died before desquamation occurred.

Passage experiments from rabbit to rabbit were unsuccessful when nasal discharges were used, but successful inoculations were made when blood or a suspension of lung tissue from severe and fatal cases were used. The other passage experiments were conducted with rabbit blood cultures.

Attempts have also been made to get a specific organism from the filtered nasal washings from patients, and while work along these lines is incomplete, the reactions obtained in rabbits inoculated with the fifth transfer of such cultures indicated at least that the virus remains alive and virulent at 37° C. for 24 days.

The results obtained by reinoculating convalescent animals have thus far been rather contradictory, and frankly successful in only two cases.

M. M. BANOWITCH.

## SECTION ON PEDIATRICS

SPICER, C. R.: **Pyloric Stenosis.** *Nebraska State Medical Journal*,  
March, 1922, vii, No. 3, p. 86.

The weight of opinion supports the tenet that there are both spasmodic and hypertrophic types of pyloric stenosis, and that a case may start as spasmodic and terminate in hypertrophy of the circular muscular fibers of the pylorus.

Symptoms appear between the second and twelfth weeks. It occurs most frequently in first-born males. Symptoms consist of regurgitation of part of food; no nausea is present; nursing and bowels are regular, and temperature normal. Soon child vomits all food, seems hungry, and loses weight rapidly. A most striking symptom consists of the reflex peristaltic waves which can be seen soon after nursing moving from left to right across the abdomen, following which the stomach is suddenly emptied with a gulp. Emesis may not follow nursing, but later a larger amount is brought up. A tumor the size of a small to medium-sized olive can usually be palpated. The stool is well digested but small. Differentiation should be made in diagnosis from acute indigestion. There is no discomfort of indigestion present, no sign of nervous disturbance, no increased intracranial pressure.

The most efficacious treatment consists of (1) surgery by the Fredet or Rammstedt operation, and (2) a diet of thick gruels of farrinaceous foods. The first will be necessary to relieve a condition caused by anatomical limitations and the second to relieve a condition resulting from functional abeyance such as pylorospasm. The simplest surgical operation (after Rammstedt) consists of the division of the hypertrophied annular muscular fibers down to the mucosa. This can be done in about fifteen minutes and occasions little hemorrhage or shock. A simple dietary treatment consists of a



combination of skimmed milk, water, rice flour and dextrimaltose, boiled until so thick that it will not readily drop from a spoon. This should be given through a slit nipple from a spoon and as hot as the baby can take it. Also with each feeding a 1:1000 solution of atropin should be given.

REITGER, L. F., AND CHEPLIN, H. A.: *Bacillus Acidophilus* and Its Therapeutic Application. *Archives of Internal Medicine*, March, 1922, xxix, No. 3, p. 357.

*Bacillus acidophilus* is an organism which is normally found in the stools of nursing infants. It has been suggested that the implantation of this organism in the intestines of patients who are suffering from the effects of an injurious intestinal flora might be of therapeutic value. The authors and their coworkers have established through many observations the possibility of accomplishing such implantation and the most successful technic. They then proceeded to utilize this procedure in a number of pathological conditions and report the results in a few of the patients in whom it was tried. It gave very good results in chronic constipation, several cases of chronic colitis, two cases of tropical sprue, and a case of eczema. The authors intend to publish fuller clinical reports later. This paper deals largely with the technic of the administration. It is stated that little can be expected without the use of acidophilus milk very carefully prepared and given with varying doses of lactose, the course of treatment being checked by repeated bacteriological examination of the stools during the whole process. To prepare the milk, it is directed that fresh skimmed cow's milk shall be sterilized in one heating. One quart flasks should be heated to 115-120° C. (248° F.) for 22-24 minutes. It should then have a dark cream color, but should not be brown. After cooling to at least 37° C. (98.6° F.) it is inoculated with pure strains of the organism which have been grown in milk with repeated transfers and are capable of developing rapidly and bringing about coagulation of the casein within 24 hours. It is thoroughly mixed and incubated at a temperature of 35° to 37° C. (95° to 98° F.) for twenty-four hours. This milk may then be used as the inoculum. After incubation the casein appears as a soft curd overlain by the whey. On shaking, the curd falls to pieces and the

milk acquires a smooth consistency like that of cream. The acidity is decidedly less than of *Bacillus Bulgaricus* milk and the odor and flavor are said to be like those of a high grade buttermilk. The dosage advocated was one quart a day, thoroughly mixed with 100 grams of lactose. If diarrhea resulted the amount of lactose was reduced, while if constipation was obstinate, the lactose was increased. The milk was given in three doses, each dose being at least two hours before and after the taking of other food.

T. HOWARD.

SAUER, L. W.: **Powdered Protein Milk as a Prophylactic Food for Young Infants.** *Archives of Pediatrics*, January, 1922, p. 1.

The author uses protein milk made to approximate Finkelstein's formula of Eiweissmilch, in feeding young babies. Since 1912 several thousand normal infants under ten pounds have been fed successfully for weeks or months, in many of whom it was the sole diet. He reports that failure in its use as a rule means either giving insufficient protein milk, whereby a generalized inanition ensues or giving insufficient carbohydrate, causing the damage due to carbohydrate starvation. Ten per cent carbohydrate often is necessary.

The preparation, if home-made should be carefully prepared as follows: To a quart of whole milk in a double boiler at 105° F., is added a tablespoonful of essence of pepsin. After thirty minutes suspend curd in a cheese cloth bag, rub curd four or five times through a fine sieve (36 wires to the inch), adding a pint of fresh buttermilk and enough water to make a quart. The whole is then boiled vigorously and beaten to prevent clumping. The curds must be finely divided to be of value. It should have the appearance of whole milk. Saccharin or carbohydrate may be added to make it palatable. The latter should be gradually increased to tolerance.

Powdered protein milk, as furnished by several firms may be used. This makes its preparation simple, all that is necessary is to add the proper amount of powder to warm water and pass it through a sieve, adding saccharin or dextri maltose. He gives an outline of his procedure of feeding and illustrates, by 4 case reports, its use: (1) As a complimentary food for prematures; (2) as an exclusive diet for prematures; (3) as an exclusive diet for young infants much under weight; and (4) as an exclusive diet for the new born.



He further concludes that symptoms of indigestion or overfeeding are rare when it is used, also that transition to cow's milk mixtures when the baby has reached ten pounds can be made without the development of untoward symptoms.

T. B. GIVAN.

STIMSON, P. M.: **Certain Aspects of Measles.** *Archives of Pediatrics*, January, 1922, xxxix, 11.

From October, 1919 to May, 1920 on Manhattan Island there were reported 15,481 cases of measles, while all the other acute contagious diseases of childhood combined totaled only 11,725. The extreme prevalence of this disease prompted the author to review some of its manifestations; he notes that as a rule, it is more serious the younger the patient; that the virus, shown by Blake to exist in the blood, catarrhal discharges, and skin, is probably not air-borne; the prodromal stage is a markedly infectious period; the first symptom is usually fever, appearing after an average incubation period of ten and a half days, while the catarrh appears about twenty-four hours later, though usually forty-eight hours before the appearance of the rash; during the three days previous to the rash the infected child is likely to transmit the disease to a considerable proportion of such susceptible children as may come in direct or indirect contact with him.

T. B. GIVAN.

SECTION ON  
ROENTGENOLOGY AND ELECTRO-  
THERAPEUTICS

MURPHY, J. B., LIU, J. H., AND STURM, E.: Studies on X-Ray Effects.

IX. The Action of Serum From X-rayed Animals on Lymphoid Cells in Vitro. *The Journal of Experimental Medicine*, March, 1922, xxxv, No. 3, p. 373.

In the course of an investigation on the biologic effects of x-rays, it was noted that, while larger doses of this agent destroy lymphoid tissue, very small exposures, after causing a slight amount of destruction, bring about an actual stimulation of this tissue. Very small doses possess but slight penetration; yet the deeper lymphoid organs show as much evidence of stimulation or destruction as do the organs which are superficial enough to be acted upon directly by the rays.

This observation led to a consideration of the possibility of the spleen and lymph gland changes being secondary to some alteration in the circulating blood or other tissues brought about by the action of the x-rays.

A number of healthy young rats were exposed to a dose of x-rays governed by the following factors: Spark-gap,  $2\frac{1}{2}$  inches; milliamperes 10; distance 12 inches; and time 14 minutes. The animals were immediately anesthetized and exsanguinated. After clotting, the serum was twice centrifuged. Serum was similarly collected from rats which had not been x-rayed. The thymus and mesenteric lymph glands were removed from normal rats and divided into equal halves. The halves were mixed with serum from normal and x-rayed rats respectively, and then ground in a mortar. The suspensions were passed through filter paper under suction. Counts were made of the two filtrates to determine the number of cells present, and then enough of the two sera was added to reduce the count to between



10,000 and 20,000 cells per cu. mm. The tubes were placed in a water-bath at 37° C. for two hours. They were then removed, shaken, and counted, and again, after four hours in the water-bath, this procedure was repeated.

The average of these fourteen experiments showed that the cells suspended in normal serum decreased by over 3,000 during the first two hours and by another 1000 at the end of the four-hour period. The cells in the serum from x-rayed animals increased by over 3,000 cells in the first two hours and showed only a slight drop between the two-hour and four-hour periods. At the end of the period of observation the counts showed that the suspensions still had some 3,000 cells per cu. mm. more than the original suspension. Examination of a large number of stained films from these suspensions at the two-hour period showed among the cells suspended in serum from x-rayed animals a fairly large number of mitotic figures. The average was a little less than one mitosis to a thin film, and occasionally three or more were found to a film. In only one instance was a dividing cell found in the normal serum suspension.

This stimulative effect of the serum from x-rayed rats endures from one to two hours after the exposure, but is not detectable in the serum taken seventeen hours or later after exposure. Serum x-rayed in vitro is devoid of stimulative action.

H. M. FEINBLATT.

NAKAHARA, W., AND MURPHY, J. B.: Studies on X-ray Effects. X. The Biological Action of Small Doses of Low Frequency X-rays. *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 475.

With small doses of soft (low frequency) x-rays, it is possible to induce an apparent stimulation of the lymphoid cells, which is preceded by only a very short period of depression. By employing a special water-cooled tube with a window of thin glass to allow the passage of rays usually held back by the thicker glass of the standard tubes, the authors were enabled to study the effects of still softer x-rays. Mice exposed for one minute (1½-inch spark-gap and 11 milliamperes) showed two days later an increase in the number of lymphocytes in the blood and an increased number of mitotic figures in the

lymphoid organs. There also occurred a marked dilatation of the vessels of the suprarenals, particularly between the cortex and the medulla. No changes were observed in any of the other organs, not even in the testes and the ovaries.

Mice treated in this way showed a high degree of resistance to cancer transplants. Normal white mice were exposed to doses of soft x-rays under the conditions described above, and subsequently, along with a suitable number of controls, were inoculated with grafts from a transplantable tumor. Among 86 mice inoculated from seven to fourteen days after treatment, 34.4 per cent were immune, while in 57 control mice inoculated with the same tumor there were only 5.1 per cent immune. Furthermore, the rate of growth was slower in the treated animals than in the controls, and, in a proportion of the treated mice, the tumor, after a period of growth, was absorbed, a condition which rarely occurs with this tumor in normal mice. The resistance was at its highest point ten days after the treatment.

H. M. FEINBLATT.

LIU, J. H., STURM, E., AND MURPHY, J. B.: **Studies on X-ray Effects.**  
XI. **The Fate of Cancer Grafts Implanted in Subcutaneous Tissue Previously Exposed to X-rays.** *The Journal of Experimental Medicine*, April, 1922, xxxv, No. 4, p. 487.

It has already been shown that an erythema dose of x-rays to the skin layers of mice renders the latter refractory to subsequent intracutaneous inoculation of cancer, while the subcutaneous tissues show no such resistance. These observations have been offered as a probable explanation of the fact that many skin cancers in man are readily influenced by x-rays, while indetential cancers in the superficial lymph nodes are controlled with great difficulty, if at all, by the treatment.

In a series of white mice, a skin flap was turned back and the abdominal muscles exposed. The wound was then subjected to a dose of x-rays governed by the following factors: 3 inch spark-gap, 10 milliamperes, 6 inch distance, two and half minutes. With the exception of this area, the animal's body was protected by sheet lead. Immediately after the treatment a cancer graft was introduced into the loose connective tissue of the under side of the flap and the skin



sutured back into place. As a control, another series of animals was treated exactly in the same fashion except that no x-rays were given. Weekly examinations were made to determine the fate of the cancer grafts and later verified by autopsy. Of 59 x-rayed mice, 66.1 per cent were resistant to the cancer grafts; while of 46 controls only 17.4 per cent withstood the graft. Furthermore, in those animals in which the grafts took, the growth of the cancer was greatly retarded as compared with the controls. It is apparent from these experiments that an erythema dose of x-rays given directly to the subcutaneous tissue brings about some change which renders this tissue decidedly less suitable as a soil for the growth of implanted cancer. Next, ten white mice were given a dose of x-rays governed by the same factors as above described, and subsequently a skin flap was turned back and a cancer growth implanted. The tumor grew in all of these animals. Histological examination shows that a few days after the exposure of the subcutaneous tissue to x-rays there is a lymphoid infiltration of this area.

H. M. FEINBLATT.

ROBINSON, C. F.: **Non-surgical Treatment of Diseased Tonsils.** *Clinical Medicine*, March, 1922, xxix, No. 3, p. 180.

The author asserts that it is now universally known that the x-ray will produce a "selective action", consisting of a decrease in size and a smoothing out of the surface of the tonsils. Radium is practically identical in action when used in well-screened doses, and it carries an advantage of convenience and time.

The tissues of children are more easily altered than those of adults. The infected fibroid tonsil as well as the chronically enlarged tonsil react very satisfactorily. A favorable circumstance in the treatment is that the adenoid, the infratonsillar nodule, the lingual tonsil and chain of lymphatics which extend well up the lateral walls of the throat to the eustachian tube all receive radiation, thereby clearing up conditions that might continue after the customary surgical intervention.

This method of treatment is especially beneficial in connection with those suffering with chronic endocarditis or pericarditis or to the hemophilic who should not be subjected to the risk of surgery or

an anesthetic. It also is a welcome experient for the nervous and timid patient or for children.

In the use of radium only one application is required, same extending over six or twelve hours. The x-ray treatment necessitates from six to eight fortnightly trips. The author favors the radium treatment and says there is no difference in the cost of radium and x-ray treatment.

VAN ALLEN, H. W.: **Hyperthyroidism, Basal Metabolism and Radiography.** *The Journal of Radiology*, March, 1922, iii, 83.

Hyperthyroidism is a condition which is more common than is generally supposed, and patients suffering from it are very often classed as neurasthenics or are said to be suffering from cardiac lesions.

Too much attention has been given to the so-called characteristic symptoms of hyperthyroidism; exophthalmus, goiter, tachycardia and tremor. Several of these signs may be absent and others only obscurely present, and still the patient be almost invalidized from the systemic effect of the disease. Almost absence of winking, the usual staring of the eye, nervousness, unusual perspiration, mental irritability and a slight but gradual loss of weight are early symptoms not to be overlooked. In such cases tests of basal metabolism are of the greatest value.

Cases with apparent cardinal symptoms have shown a normal metabolism, while subsequent history has proven them to have malignant or some other non-thyroid disease.

The effect of x-ray or radium upon all cell activity needs no further proof. In proper doses its inhibition is without exception. Because one operator giving too small a dose of x-ray, stimulates an epithelioma, while another with proper dosage destroys, the rule of inhibition is not disproved. This is true in thyroid cases; there is a proper dose and success will follow its usage. Van Allen's technic is as follows: Three and one half milliamperes, fifteen minutes, four and one-half mm. aluminum filter, eight and one-half inch spark gap, sixteen inch distance, six treatments on each side of the neck (twelve treatments in all) given twice a week. A few cases have required retreatment.



Van Allen does not wish to be understood as saying that all cases of hyperthyroidism yield to radiation, but insists that the exceptions are few.

He makes a strong plea for careful basal metabolic tests in all cases where a diagnosis of hyperthyroidism is made and also in many cases of obscure nervous or supposed cardiovascular disease.

WARREN, S. L., AND WHIPPLE, G. H.: Roentgen Ray Intoxication. I. Unit Dose Over Thorax Negative—Over Abdomen Lethal. Epithelium of Small Intestine Sensitive to X-rays. *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 187.

The authors' experiments upon normal dogs make it clear that the fundamental thing in the systemic intoxication due to the roentgen rays is a primary injury of the epithelium of the small intestine. Roentgen radiation of the thorax (abdomen shielded) in dogs, even with large doses (up to 512 milliamperere minutes) gives no clinical evidence of intoxication. Roentgen radiation of the abdomen (thorax shielded) with a dose of 350 milliamperere minutes will almost certainly cause a fatal intoxication.

The clinical picture of lethal intoxication is remarkably uniform, and begins, after a latent period of twenty-four to thirty-six hours, with diarrhea and vomiting. On the third and fourth days the vomiting increases, the diarrhea becomes bloody, and the animal passes into stupor. Death almost always occurs on the fourth day.

Anatomically the only lesions of significance are to be found in the small intestine. The epithelium of the crypts and villi shows more or less complete necrosis, and this condition may involve almost all of the small intestine.

H. M. FEINBLATT.

MYERS, J. A.: Comparison of Vital Capacity Readings and X-Ray Findings in Pulmonary Tuberculosis. *American Review of Tuberculosis*, January, 1922, v, No. 11, p. 884.

In cases suspected of having pulmonary tuberculosis the lung capacity test is very valuable in diagnosis. If there is a reduction

of more than 15 per cent, it is usually of clinical significance. In view of the fact that other pulmonary conditions and cardiac conditions may show decrease it is necessary to have stereoscopic plates made. In cases of peribronchial tuberculosis, X-ray plates are necessary in diagnosis, since in many such cases the lung capacity is well within normal limits. In parenchymatous tuberculosis the lung capacity test is valuable in ascertaining the severity of the lesion when other factors are excluded. It is not so valuable in determining the extent of the lesion, for a small but severe lesion may reduce lung capacity more than an extensive lesion of a low grade type. In some cases of fairly extensive fibrous and calcified tuberculosis the capacity is within normal limits. The most valuable feature of the spirometer is that it will show increased capacity on improvement of the lung condition and decreased capacity as the condition becomes progressively worse.

C. A. SCHMID.

WARREN, S. L., AND WHIPPLE, G. H.: **Roentgen Ray Intoxication. II. A Study of the Sequence of Clinical, Anatomical, and Histological Changes Following a Unit Dose of X-rays.** *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 203.

Five dogs were exposed to lethal doses of roentgen rays over the abdomen and killed at intervals varying from two hours to four days after this injury. Thus it was possible to correlate the anatomical findings with the clinical symptoms at different stages.

At the end of two hours no symptoms had developed and necropsy was practically negative. At the end of twenty-four hours the dog appeared normal clinically, but at necropsy all of the small intestine showed definite nuclear changes in the epithelium of the crypts. There was an unmistakable invasion of polymorphonuclear leukocytes.

The second day was characterized clinically by slight vomiting and diarrhea. In the dog killed at the end of the forty-eight hour period, there was almost complete necrosis of the crypt epithelium of the small intestine, while the villi remained practically intact.

The third day showed clinically increasing vomiting and bloody diarrhea. In the animal killed at the end of the seventy-two hour



period, the entire small intestine looked raw, red, and inflamed. The crypt and villous epithelium had in large part vanished, leaving a collapsed framework of the mucosa.

The one surviving dog became comatose during the fourth day, exhibiting severe vomiting and bloody diarrhea. At the end of this period necropsy disclosed practically the same findings as in the previous case. There was evidence of efforts of epithelial repair on the part of the small intestine.

H. M. FEINBLATT.

WARREN, S. L., AND WHIPPLE, G. H.: Roentgen Ray Intoxication. III. Speed of Autolysis of Various Body Tissues After Lethal X-ray Exposures. The Remarkable Disturbance in the Epithelium of the Small Intestine. *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 213.

In an attempt to determine the various changes in cell autolysis at different periods following a lethal x-ray exposure, five dogs were subjected to 350 to 480 milliamperes minutes diffusely over the abdomen, and subsequently, at the end of 2, 24, 48, 72, and 96 hours respectively, sacrificed under chloroform or ether anesthesia. The conclusions as to the degree of autolysis were based upon examination of 600 histological sections. Autolysis appeared first and to the greatest extent in the crypt epithelium of the small intestine. This was by far the most pronounced lesion. Definite but less pronounced changes were observed in the epithelium of the villi. In tissues taken from radiated animals within forty-eight hours of the initial exposure the spleen, lymph-glands, liver, and pancreas showed a moderate increase in speed of autolysis. The colon showed little change, and the stomach and the kidney were negative.

H. M. FEINBLATT.

## SECTION ON NEUROLOGY AND PSYCHIATRY

CRILE, G. W.: **Control of So-called Hyperthyroidism by Digitalis and Water.** *New York Medical Journal*, April 5, 1922, cxv, No. 7, p. 376.

Rather than say that they are caused by an acute over-activity of the thyroid, it is more nearly accurate to consider the signs of hyperthyroidism (cardiac dilatation, excessive tachycardia, fever, nausea, and vomiting, restlessness, flushed face, occasional delirium and acetone odor of breath) as the result of acute intracellular acidosis, produced by accumulation of acid products resulting from excessive metabolism of exophthalmic goiter. In this condition the heart muscle is particularly overworked, and it follows that the body requires an increased amount of water in circulation. So long as the heart can supply the proper amount of water and oxygen to the primary organs, no desiccation of cells of the master organs results. If the heart drops back in efficiency, the intracellular acidosis increases correspondingly. The unsatisfied acid radicles combine with the alkaline ammonia in the protein molecules, heat is liberated, nitrogen balance is lost, and death from exophthalmic goiter results.

Hence, the author deduces that a strengthening of the myocardium and the administration of large amounts of water to the cells of the master organs will produce rapid improvement, provided actual dissolution has not set in. Protein disintegration will be arrested and the abnormal body temperature and blood nitrogen will disappear. This also indicates that morphin should not be used to control the incident excitability and restlessness.

The author has adopted the following measures in treatment: Digitalization of the heart muscle by not more than 20 minims of



tincture of digitalis every four hours until 8 to 10 doses, or until active nausea is produced. In presence of acidosis vomiting the digitalis may be given in large doses by rectum. At the same time the desiccated patient is given from 4000 to 7000 c. c. of normal saline subcutaneously each twenty-four hours by Bartlett's method, i. e., novocain is added to the infusion to make a one-sixteenth to one-thirty-second per cent solution. These procedures are followed both preoperatively and postoperatively.

In addition fullest anociation is employed; that is, operation is performed in patient's room; local anesthesia is employed; inhalation anesthesia does not progress beyond analgesia; the wound is left open for twenty-four hours to avoid driving power of aseptic wound secretions.

*Conclusion.*—The mortality rate of 1869 thyroid operations, including 1069 for exophthalmic goiter, has been 1.3 per cent (25 deaths), and the mortality rate of 783 ligations has been 0.73 per cent (6 deaths).

DRAPER, J. W.: *The Infected Colon as Related to the Toxic Psychoses.* *The Boston Medical and Surgical Journal*, March 9, 1922, clxxxvi, No. 10, p. 304.

The author's conclusions are: The colon, in whole or in part, is occasionally an important local focus which may stand in causative relationship to the toxic psychoses. The toxic psychotic patient should be intensively studied by the medical group method; particularly for the discovery and removal of local foci of infection; and treatment should be both surgical and medical. The toxic psychoses even when well established can be arrested in over 65 per cent of cases if the proper surgical and medical work is done before deterioration has rendered the condition incurable. Prevention of the psychosis will follow early recognition and eradication of the toxemia. Intestinal toxemia is a triad originating in food proteins, in perversion of the intestinal epithelium, in streptococcus and *Bacillus coli* invasion of the bowel wall,—one or all. In 20 per cent of the toxic psychotics it stands in important causative relation to the mental symptoms.

M. M. BASOWITCH.

HAMILTON, B. E.: **Clinical Notes on Hearts in Hyperthyroidism.** *The Boston Medical and Surgical Journal*, February 16, 1922, clxxxvi, No. 7, p. 216.

There is a general agreement that hearts are profoundly affected by hyperthyroidism. There is no accepted and clear understanding of the nature and effect of hyperthyroidism on hearts. It is of interest to know whether or not hyperthyroidism damages the heart; if there is damage to what extent it is disabling, and what effect treatment may have in controlling it.

The clinical observations reported were based on a study of 200 hearts in hyperthyroidism. The cases fall into two classes: (1) Those without evidence of heart damage; this is much the larger class, and (2) those who show definite heart changes.

The first class is considered under the following headings: rhythm, enlargement, murmurs, signs or history of cardiac failure. The rhythm in the heart beat of these cases shows nothing abnormal but a simple tachycardia. These hearts do not show enlargement. Systolic murmurs are the rule but they resist classification. Such murmurs, in the absence of other signs, are not evidences of heart damage. Diastolic murmurs have not been heard. Sharp or prolonged apical first sounds, frequently mistaken for presystolic murmurs, are frequently heard. True signs, or history of heart failure have not been found in this class. It would appear that when cases in this class are cured of hyperthyroidism they are left with no demonstrable evidence of heart damage.

The second class shows definite heart changes. Among this class is a small number of patients with rheumatic heart disease and hyperthyroidism added. Each case of rheumatic heart disease with hyperthyroidism seen by the author has shown auricular fibrillation. A larger group of the second class have definite hypertrophy and either paroxysmal or established auricular fibrillation, and no evidence of rheumatic or other heart disease. Signs of heart failure have been seen in this group. Eighteen cases of auricular fibrillation with hyperthyroidism are analyzed. Six of these, having paroxysmal attacks of auricular fibrillation were relieved of hyperthyroid symptoms by operative measures. Apparent cessation of the paroxysmal attacks of auricular fibrillation followed this relief. The other twelve cases had established auricular fibrillation, seven were operat-



ed upon and three resumed their normal rhythm, and the others are still fibrillating.

*Conclusions.*—The great majority of hearts in cases of hyperthyroidism are found with no evidence of damage. Heart failure is not found in this class, even when death occurs. Hyperthyroidism in the presence of, (a) rheumatic heart disease, and (b) middle age (over 45 years), has a tendency to cause established or paroxysmal auricular fibrillation. Many cases of hyperthyroidism showing auricular fibrillation are relieved of their auricular fibrillation after relief of hyperthyroidism by operative measures, while digitalized. Cases with auricular fibrillation without true signs of heart failure have stood operation well. All auricular fibrillation cases with hyperthyroidism can be improved by digitalization. It is suggested that digitalization has a favorable influence on the cure of auricular fibrillation in hyperthyroidism.

M. M. BANOWITCH.

HEAD, H.: *Certain Aspects of Pain.* *British Medical Journal*, January 7, 1922, No. 3184, p. 1.

What is popularly called pain may contain two elements. First, a true specific sensation, exactly equivalent to that of heat, cold, and touch; secondly, a discomfort or unpleasant feeling tone, which may accompany many other sensations besides those which are called specifically painful. Both lead to the production of impulses or reflexes which tend to remove the affected part or the whole animal from the place or object productive of the unpleasant experiences. Reactions of this kind are impulsive and urgent, the movements they produce are uncontrolled, and they permit of no choice. The optic thalamus and the cerebral cortex are the two sensory centers involved in this action, and they are not independent of one another, but the cortex exerts a dominant influence over the response of the thalamus. When a gross organic lesion releases the thalamus from this controlling influence of the cortex, any stimulus capable of producing discomfort or pain, or even pleasure, will produce an exaggerated effect on the half of the body opposite to the lesion.

The same laws are at work in painful manifestations of visceral origin, but here, no structural changes can separate the controlling

mechanism from the centers which receive those potentially disagreeable impulses. Normally, afferent impulses from the viscera do not enter consciousness, but afferent impressions from the internal organs are capable of arousing pain and discomfort, and while the viscera are incapable of reacting to the ordinary painful stimuli, they do react briskly to changes in tension, which is their natural mode of stimulation. There is a resistance on the part of the nervous system, to potentially disagreeable impressions, but when these visceral impulses become sufficiently strong to overcome the inhibition by which they are normally held in check, or when the forces opposing their passage, are diminished, sensory responses may follow, and once the path has been opened, the dominance of the higher centers overcome, a weaker visceral stimulus will be followed by sensation.

There is reason to believe that the viscera have a double afferent supply, and that one corresponds to the deep system, which supplies muscles, tendons and joints. Parts innervated by this system are insensitive to light stimuli, but are endowed with definite local signature, and the patient is able to appreciate within certain limits, the stimulated spot. Associated with this, is the deep tenderness observed in pleurisy or localized abdominal inflammation. The majority of pains arising from visceral disease are referred and often, to parts remote from the site of the lesion. Afferent impulses from some organ in the thorax or abdomen may be accompanied by areas of tenderness on the scalp, because it is in relation directly with the excited segments, if one recalls the relation of these parts during development. If a stimulus is very strong, as in gall-stone colic, the pain may spread very widely, upwards and downwards, and even become bilateral, or extend into regions which have no direct nervous relation with the affected organ. Should a referred pain become chronic, this forms an even more important cause for its diffusion; it tends to spread by the fact of its duration.

The passage of impulses is facilitated by time, and impulses can now excite pain which previously failed to do so. Diffusion of potentially painful impulses is normally prevented by that natural inhibition exercised by the central nervous system over disagreeable impressions, and once this is relaxed they spread widely. Certain bodily states form potent causes of such diminished automatic control, as, menstruation, fever, anemia, anxiety, or emotional shock. Occasionally, central resistance to potentially disagreeable impulses



is temperamentally so low, that pain may appear without any obvious cause for peripheral stimulation. When the afferent impulses underlying the sensations of pain and discomfort impinge on the central nervous system, they disturb its balanced activity as a whole, and the result they produce depends on the constitution of the organism, and not only on the site of the affected organ or the nature of the disease.

L. C. JOHNSON.

HUME, W. E., NATTRASS, F. J., AND SHAW, A. F. B.: **Twenty Cases of Encephalitis Lethargica, with Pathological Findings in Four Cases.** *The Quarterly Journal of Medicine*, January, 1922, No. 58, p. 131.

In this group there were 14 males, and 6 females. The onset was acute in 12 cases, insidious in 8. Five patients were seized with fever and delirium and 3 with fever and marked neuritic pains, 1 with acute mental disturbance and 1 with acute retention of urine. Insidious cases were characterized by drowsiness. The majority of the acute cases had a temperature between 102° and 103° F. (38.88° and 39.44° C.) with corresponding increase of pulse rate. Hyperpyrexia occurred in 3 fatal cases. Lethargy in some form occurred in 17 cases. The nervous system symptoms present were as follows: diplopia, 12 cases; in 6 there was paralysis of ocular muscles; pupils did not react to light and accommodation in 13; poor and sluggish reaction, 5; bilateral ptosis, 2; nystagmus, 2; optic neuritis, no evidence at any time. Trismus was a marked feature in 2 cases. Seventh nerve paralysis present in 5 cases. Hypoglossal nerve paralysis, 1; fine tremors of various groups, 4; myoclonus, 14 in 9 of these the limbs were chiefly involved, abdominal and back muscles in 3, face and jaw in 2, rigidity of neck, 4, katatonia, 1. Knee-jerks appeared to be normal in most cases but were abnormal in 6; in 1 they were sluggish; in 3 there was considerable disparity on the two sides; in 1 they were much exaggerated and associated with ankle and patellar clonus. Babinski was present in 6 cases, double in 3 and single in 3. There was complete urine retention in 1 case; 1 case had occasional retention; and 3 had temporary incontinence. The cerebrospinal fluid was examined in 8 cases, all being clear and under pressure. A lymphocytosis was present in 4 cases, increase of globulin in 2, and an excess of reducing substance in 2. Bacter-

iology and Wassermann negative in all cases. There were 4 deaths in the series.

M. M. BANOWITCH.

RUSSELL, N. G., MILLET, J. A. P., AND BOWEN, B. D. **Clinical Studies in Functional Disturbances. Study I. Functional Thyroid Tests as an Aid to Differential Diagnosis.** *The American Journal of the Medical Sciences*, December, 1921, clxii, No. 6. No. 597, p. 790.

This study of 85 cases divides them into four groups; hyperthyroid, hypothyroid, fatigue, and miscellaneous. The functional tests employed were basal metabolism, glucose tolerance, and the Goetsch test. The clinical methods were found satisfactory in the diagnosis of frank hyperthyroidism, myxedema, and to a lesser extent in the third and fourth groups. In hypothyroidism, not exedematous, the ordinary clinical methods usually failed, and the diagnosis was confirmed by decreased metabolic rate, with improvement after the administration of thyroid extract. The basal metabolic interpretations were the only ones to give definite uniform determinations. Both of the other tests yielded positive results in almost all cases of hyperthyroidism but also responded in a variety of other conditions. The authors lay special emphasis on three points: (1) That there are some cases showing definite hypersensitiveness to adrenalin and glucose tolerance who tolerate thyroid extract well and improve under its administration; (2) that it is dangerous to put too much emphasis on a positive Goetsch test in suspected hyperthyroidism; and (3) an occasional case of classical exophthalmic goiter showing marked increase of basal metabolic rate may exhibit no hypersensitiveness to adrenalin.

A. T. MAYS.

HOXIE, G. H.: **Endocrine Therapy in Cases of Low Blood-pressure.** *Endocrinology*, November, 1921, v, No. 6, p. 773.

Individuals having low blood-pressure, may be divided into groups as follows: (1) Those with infections, acute, chronic, or focal; (2) those suffering from exhaustion, either nervous or phys-



ical; and (3) those who have low pressure depending upon constitutional anomalies which are congenital.

The first two groups contain the greatest number of cases, and of these, those suffering from focal infection or those exhausted by business strain and effort are the most numerous.

The problem is, whether the endocrine hormones are the link in the chain between the infection or exhaustion and the low blood-pressure, or lowered vasomotor tone; or whether the cause acts directly through the disturbance of cell nutrition.

Epinephrin has given no benefit in these cases, and we cannot regard adrenal dysfunction as a cause of lowered blood-pressure. Pituitary substance will alter the blood-pressure, but does not stabilize permanently the vasomotor tone. Thyroid gland has had a slight show of success, particularly as an adjunct to general measures in the cases with a low metabolic rate.

It is concluded that the depressed vasomotor tone is not due to the exhaustion of any one gland, but to general nutritional causes, in which the hormones are only one factor. The use of such endocrine products symptomatically, is uncertain, and they possess no superiority over the vasomotor stimulants of vegetable origin. The prime requisite is rest, both of mind and body, and the vasomotor tone depends as much on psychic as somatic influence.

L. C. JOHNSON.

STANLEY, L. L.: **Testicular Substance Implantation.** *Endocrinology*, November, 1921, v, No. 6, p. 708.

In 1915, at San Quentin Penitentiary experiments were begun, in which the testicles of recently executed prisoners were engrafted into elderly recipients, and 21 cases in all are reported here. After 1920, animal glands were substituted for human. At first too large pieces were used, and all of these sloughed out. Later smaller pieces of gland were merely laid in the pampiniform plexus of the scrotum, or imbedded in the fascia overlying the rectus abdominalis.

In all cases the transplants either sloughed, or necrosed and were absorbed. Transplants were then abandoned and testicular substance of mature ram, goat or boar, was injected under the skin of the abdomen, in four gram doses, a gram being injected in four dif-

ferent areas radiating from a single skin puncture. This was accomplished usually without inconvenience to the recipient, except a slight reddening and itching. The masses could be felt under the skin for weeks and months after the injection.

Over 300 individuals were so treated, and after the first 20 subjects were treated, the remainder applied for the injections. The fact that there were so many applicants, is taken to signify that there was beneficial result obtained. If there were no benefits to be derived the news would quickly travel, and there would be no volunteers. Almost all subjects reported increased sexual activity, appetite was improved, there was a feeling of buoyancy, an increased energy and mental activity, and loss of tired feeling. In the series there were eight cases of asthma of which four were apparently cured. The observations were undertaken with "an unbiased mind, and the endeavor to pursue the truth, wherever it may lead."

L. C. JOHNSON.

HAMMAR, J. A.: The New Views as to the Morphology of the Thymus Gland, and Their Bearing on the Problem of the Function of the Thymus. *Endocrinology*, November, 1921, v, No. 6, p. 731.

The lymphocytes in the thymus are necessary postulates for the function of the organ, but the essential functional changes take place in the epithelial thymus reticulum, in the form of an enlargement of separate cells or cell groups, causing in mammals the formation of the concentric cell complexes known as Hassall's corpuscles. These originate under the influence, direct, or indirect, of the lymphocytes in the medullary reticulum, which is prepared and "sensitized" by special influences, and they form the morphological expression of an antitoxic activity.

No experiments as yet have proven that the thymus has an internal secretion, but they seem to support the theory that the thymus has an antitoxic activity.

Barbara concluded that the thymus either forms complement or by the formation of hormones, stimulates other organs to form complement. It also forms or increases the formation of opsonins, but it is uncertain whether it plays any part in the formation of agglutinins. "Thymic asthma" due to pressure, and "more thymica"



should be sharply differentiated, and there is no reliable evidence that the latter is due to abnormality of the thymus.

L. C. JOHNSON.

BAARENBERG, L. H., AND ROSENBERG, P. Incidence of the Wassermann Reaction in a Large Child-caring Institution. *Archives of Pediatrics*, January, 1922, p. 23.

The incidence of congenital lues appears to be higher in Europe than in America from available statistics. Results of observations on the comparative value of the Wassermann and luetin reactions by various workers from different parts of the world are noted. In the authors' series of 472 institutional children, 830 Wassermann tests were performed by the laboratory of the Department of Health of New York City as well as that of the State. They were all negative. Three hundred and ninety-nine luetin tests were performed on 350 of these children; 321 were negative, 3 positive and 26 doubtful. The 3 children giving positive luetin reactions were without clinical evidence of lues and had negative Wassermann reactions. The Wassermann tests on the parents of these three were negative. Twenty-two and four tenths per cent gave a history of insanity in one or both parents; 10.8 per cent were illegitimate; 6.5 per cent were mentally backward; and 35.8 per cent showed various pathological conditions.

The children were Jewish and ranged in age from a few days to 6 years.

Their findings do not agree with similar reports from institutions, the authors conclude.

T. B. GIVAN.

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# INTERNATIONAL MEDICAL DIGEST

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## SECTION ON GENERAL MEDICINE

ROSENBLUM, J.: **Blood-pressure Studies in One Hundred and Forty Cases of Diabetes Mellitus.** *Journal of Laboratory and Clinical Medicine*, April, 1922, vii, No. 7, p. 392.

The following results were obtained: The blood-pressure in uncomplicated diabetes is normal or slightly under normal. In every case in the series where there was present a high blood-pressure there could be demonstrated that an existing nephritis, arteriosclerosis or aortitis was present. In the series 22 cases of diabetes were complicated by hypertention—a percentage of about 16. The presence or absence of sugar in the urine had no effect on the blood-pressure. A high blood-pressure in diabetes is due to a chronic nephritis, arteriosclerosis or a cardiac hypertrophy.

C. M. ANDERSON.

BRYANT, J.: **Visceral Adhesions and Bands: Normal Incidence. A Preliminary Report.** *American Journal of Medical Sciences*, January, 1922, clxiii, No. 1, No. 598, p. 75.

The occurrence of adhesions or bands in the fetus of both sexes has been greatly underestimated. Of a group of 34 fetal cases of both sexes only 5.9 per cent were free from adhesions or bands; 100 per cent of the 18 male fetuses showed such variations from the normal.



The adhesions present in the fetus are less varied in number and of a definitely less complex type than those found to occur in later life. There is practically no increase in frequency above the fetal rate until the age of 40. After this age there is a sudden increase in the rate of 50 per cent in both sexes. The quadrants of the abdomen most frequently involved by bands in both sexes are, in order of frequency, as follows: Right upper, right lower, left upper, left lower. The two actual adhesions found to occur most often in both sexes at all ages in order of frequency are: Gall-bladder to duodenum and transverse colon; gall-bladder to transverse colon in the male, and gall-bladder to duodenum in the female. In the fetus, both male and female, the two most often found were: (a) Gall-bladder to duodenum and to transverse colon; (b) gall-bladder to transverse colon. It would appear that these two most frequently occurring adhesions or bands are of congenital or developmental origin.

A. T. MAYS.

COLOXNA, P. C.: **Cervical Rib, with a Report of Two Cases.** *American Journal of Medical Sciences*, January, 1922, clxiii, No. 1, No. 598, p. 80.

Two cases of cervical ribs are reported, one, a unilateral right cervical rib with pressure symptoms and exostosis on the left seventh cervical vertebra. The other case was a bilateral cervical rib with pressure symptoms on the right side. In general the signs and symptoms are: (1) A hump-like prominence in the lateral cervical region. (2) The appearance of pressure symptoms, manifested by circulatory or nervous disturbances; brachial plexus (passing over the rib) giving symptoms of neuralgic pain in the neck, head, thorax, arms, forearms (ulnar nerve and nerve of Wrisberg usually), numbness in hands and fingers; occasionally sensory disturbances. (3) Superficial pulsations due to elevation of subclavian artery may cause different changes in blood-pressure and in structure of the vessel walls. (4) Cervical scoliosis, which is rare. X-ray definitely confirms the diagnosis. The treatment is both conservative and surgical; all surgeons agree that it is a difficult major operation.

A. T. MAYS.

RICHARDS, A. N.: **Kidney Function.** *American Journal of Medical Sciences*, January, 1922 clxiii, No. 1, No. 598, p. 1.

New evidence has been secured that increment of blood-pressure, uncomplicated by increment in velocity or volume of blood flow in the kidney, increases urine formation. This is regarded as added support of the filtration hypothesis. Evidence has been secured that some of the most weighty objections to the filtration hypothesis can be reasonably explained in a manner consistent with it. Indications have been shown that nervous stimuli and chemical substances may exert different degrees of effective influence upon the afferent and efferent vessels of the glomerulus and that this may be a factor in that automatic regulatory control of glomerular filtration which is responsible in part for the maintenance of constancy of blood composition. A new description of the mode of circulation through the glomerular vessels is presented which when verified and extended will be it is hoped of service in the study of the normal and pathological physiology of the kidney.

A. T. MAYS.

TAYLOR, S. P., AND MILLER, T. G.: **An Analysis of One Hundred and Eighty-two Cases of Cancer of the Stomach with Special Reference to the Incidence of Pre-existing Ulcer.** *American Journal of Medical Sciences*, December, 1921, clxii, No. 6, No. 597, p. 862.

A history of pre-existing ulcer was obtained in only 17 per cent. Reference of epigastric pain to the back in 29 per cent of the pyloric cancers, and of those with reference of pain to the back 80 per cent had involvement of the pylorus. Two cases were negroes. There were 43 females; 85.7 per cent were between 40 and 69 years of age; 7.7 per cent between 30 and 39; and 5.5 per cent between 70 and 89 years of age. Constipation occurred in 82 per cent; anorexia in 84 per cent, and gaseous eructations in 89 per cent. Vomiting occurred in 70 per cent; only 3 times was hematemesis found, and 2 of these were in the ulcer before cancer group. Roentgen study gave a positive diagnosis in 96.8 per cent of cases.

A. T. MAYS.



PARKER, H. L.: **The Diagnosis of Tumors of the Cauda Equina, Conus and Epiconus Medullaris: A Report of Nine Cases.** *American Journal of Medical Sciences*, March, 1922, clxiii, No. 3, p. 342.

Eight cases are reported selected from thirty-three cases of spinal cord tumors in the Mayo Clinic since 1916. The course of the disease to the time of operation was from 5 months to 8 eight years. The combination of sphincter disturbance, atrophic paresis of the lower limbs, and perianal anesthesia is characteristic of the disease. The sacral canal in comparison is wider and a tumor can grow for a long period without causing localized signs. Of the eight tumors two were encapsulated, one diagnosed as an endothelioma, and one as a glioma. The remaining six, with one exception, were tumors which showed a tendency to erode the dura, bone, and muscle, approaching even to one inch of the skin. The one excepted case was obviously a relatively benign tumor but no pathological diagnosis was made. Distressing pain, at first intermittent, is the earliest symptom, appearing many months to years before any sign is established; it later becomes constant day and night, radiating down the back of the thighs. It is less severe while walking and a sudden movement or jar will cause a spasm of suffering. Five patients in the series slept sitting up in chairs, while one slept kneeling on a chair. The characteristics of the pain are steady, constant, cramp-like, or burning numbness or ache. Pressure on the eleventh and twelfth dorsal spines produced severe pain radiating down the back of the thighs. Seven of the eight patients complained of weakness in their lower extremities. Five had difficulty in controlling the bladder and associated perianal or saddle anesthesia. Rectal control was affected in proportion. All patients had some degree of sensory loss, in proportion to their motor weakness. In all eight cases the tendo-Achilles reflex was absent or diminished, and the patellar reflexes were intact in only one. In two cases there was edema of the lower legs.

A. T. MAYS.

FUSSELL, M. H., AND KAY, J. A.: **Symptoms of Appendicitis in Acute Pericarditis.** *American Journal of Medical Sciences*, January, 1922, clxiii, No. 1, No. 598, p. 40.

The writers give three of their cases in detail and refer to several cases of others where the chief symptoms were pain in the abdomen.

fever, vomiting, tenderness and rigidity over McBurney's point, with a previous history of heart disease, and in which, on examination, a pericarditis was found. Mackenzie's viscerimotor reflex may explain the rigidity of the abdominal wall in these cases.

T. HOWARD.

BARACH, A. L.: **Pericarditis in Chronic Nephritis.** *American Journal of Medical Sciences*, January, 1922, clxiii, No. 1, No. 598, p. 44.

A description is given of the clinical and laboratory characteristics of 30 cases of chronic nephritis at the time of development of an acute pericarditis. The conspicuous features are a marked blood nitrogen retention, a constantly persistent acidosis, a high blood-pressure, severe secondary anemia, and a tendency to hemorrhage. After the development of a pericarditis the average duration of life was 29 days. Death was not linked with an advancing cardiac failure or with the acidosis, but rather with the progressive retention of nitrogen in the blood. The diagnosis was made clinically in 90 per cent of the cases, and by the presence of a pericardial friction and not by signs of effusion. In 4 cases, culture of the pericardial fluid, direct culture, yielded pyogenic organisms, and in 4 others it was sterile, with mononuclear cells predominating.

A. T. MAYS.

MASON, E. H.: **Non-specific Wassermann Reactions in Diabetes Mellitus.** *American Journal of Medical Sciences*, December, 1921, clxii, No. 6, No. 597, p. 828.

Two cases in a series of 168 gave a 4 plus reaction upon their blood, there being no history or other signs or symptoms of a specific infection. Both of the cases promptly became negative by intravenous injections of 0.15 gram (2.315 grains) and 0.4 gram (6.172 grains) of neophenarsenyl (Phenarsenyl Company, Montreal). Both showed immediate and marked rapid decline of their carbohydrate tolerance. In four months time one patient had a return of glycosuria with a marked decrease of carbohydrate tolerance and died without a terminal coma. The other patient continued to have a low tolerance for carbohydrates.

A. T. MAYS.



SELBY, C. D.: **Medical Economics—A Frank Study of the Financial and Business Aspects of the Practice of Medicine.** *Ohio State Medical Journal*, 1922, xviii, 213.

"Medicine is altruistic." Finance and business frequently are not. Lest the altruism of medicine may seem to suffer in the comparison, the writer wishes to reaffirm complete accordance with the ideals that have always characterized the profession. He wishes no assertion nor comment to be construed as a recommendation to deviate from them, at the same time it is to be distinctly understood that adherence to the obligations of unselfish humanitarian service does not in the least require a physician to be a poor business man. The doctor who uses honest, sensible business and financial methods can and should be none the less a competent, ethical physician, respected in his community, and by his clientele.

"The justification of business is that it supplies the needs of humanity. No enterprise can succeed unless it does so. The ostensible purpose is the making of money, and the success of all business organizations is measured by that standard. But the monetary return, or profit, is merely the reward for service rendered or commodity supplied. Profit is necessary, that is granted; nevertheless, it is still the reward and not the real purpose of business."

The practice of medicine does not differ from other types of business enterprise in this respect. Owing to the fact that medicine is practiced under conditions which are necessarily of the most intimate personal nature, it must be governed by certain rules that do not seem to apply to ordinary business transactions. Because of long adherence to these professional ethics, the physician measures his success, probably more than any other business man, by the quality of the service he renders rather than by the standard of monetary return.

"The foundation upon which the physician erects the structure of a successful practice is the desire to prevent disease, alleviate suffering and to effect cures of such bodily ailments as are possible."

The elements which enter into the organization of the practice of medicine do not differ from those of other forms of business pursuit. They are (1) capital, (2) labor, and (3) management.

Capital is the cost of his medical education and of equipping himself for practice. Every physician should know what his capital investment amounts to otherwise he can strike no proper balance sheet.

• Labor is physical in nature, the element that does the actual work. In medicine this is the physical ability to withstand the strenuity of the work, for he realizes, more than any other business man, that a sick or devitalized person is more or less incapacitated. This includes applying all the known methods of preventive medicine to himself. The manner in which he utilizes the service of his assistants is important and has much influence upon his accomplishments.

“Management is the brains of business organization. It bears the relation to business that the brain bears to the body. It is the directing, planning and co-ordinating element, using capital and labor to the best advantage in order that the purpose of business may be accomplished.”

Consciously or unconsciously, the successful physician utilizes and correlates all these elements and thereby creates and maintains a balanced organization for personal service. These must be supported and assisted by (1) equipment and (2) raw materials. Through the instrumentality of his organization of capital, body and brains, aided by the use of equipment peculiar to medical needs, the physician fashions out of certain raw materials the product he has to offer to the public, personal service.

The equipment is (1) office and furnishings, (2) hospital facilities, and (3) transportation facilities.

The raw materials are (1) medical knowledge, (2) experience, (3) library, and (4) supplies he needs and uses each day.

“The doctor must always be creating a demand for his services; otherwise he will lose ground. The public must know of that which he has to offer. He is limited by the methods in which he is permitted to inform them, limited by ethics of medicine. He cannot advertize, but is permitted to utilize two very productive means; (1) the quality of service he renders; (2) ethical publicity. “All physicians, to succeed continuously, must study to the limit of their resources, think to the limit of their intelligence and strive to the limit of their endurance.”

Any physician's net income will vary from year to year; on the whole it should gradually increase. As a business man he will always guard against the disproportionate increase in expense and maintenance cost. “These 2 items together, should never be more than 25 per cent of the gross income.”



Each physician must fix his own fees, taking into consideration the nature of the service he has rendered and the circumstances of the person he serves. "On the whole, the average of the medical fees of any community finds its proper level within the means of the people, the same as with any commodity. If the price is too high the public does not buy; if too low, the business is unprofitable; and thus the price finds its level. This is an economic law."

Physicians should give concern to the constantly growing demand for free and semi-free service. Reference is made to the so-called socialization of medicine and the tendency toward state and community control of practice.

The business side of the practice of medicine may be summarized as follows:

- "(1) Organize your resources, physical, mental and material.
- "(2) Deputize minor duties as rapidly as the demands of your practice warrant.
- "(3) Supervise all activities; you are personally responsible.
- "(4) Charge what your service is worth, no more.
- "(5) Limit the cost of expenses and maintenance to 25 per cent of your gross income.
- "(6) Invest 25 per cent of your net income in government and municipal bonds.
- "(7) Re-invest all interest returns.
- "(7) And finally, bear always in mind that even though yours is a noble profession, it has certain business phases that must be respected as such and treated with business sense. Otherwise you may fail as a doctor and a provider for your family. You alone are responsible."

**FRIEDENWALD, J.:** Further Observations on the Blood Sugar Tolerance Test as an Aid in the Diagnosis of Gastro-Intestinal Cancer. *American Journal of Medical Sciences*, January, 1922, clxiii. No. 1, No. 598, p. 30.

The blood sugar tolerance test cannot in any way be considered specific for carcinoma, but when taken into consideration with other clinical evidence it may serve as a valuable aid in diagnosis in obscure cases of carcinoma of the gastro-intestinal tract.

A. T. MAYS.

HILL, A. V.: **The "Buffering" of Blood.** *British Medical Journal*, March 4, 1922, No. 3192, p. 340.

The "reaction" of the blood, that is, the hydrogen ion concentration (c, H) of the blood plasma is of particular importance to the body in respiration. In the average normal man, if the volume of CO<sub>2</sub> taken up by the blood be plotted against the hydrogen ion concentration of the plasma over the range of importance in the living body, the relation is a straight line. The slope of this line is a measure of the efficiency with which the blood is buffered, in the cases of pure water the line would be nearly horizontal, and in the case of perfect buffering, if it could be secured, it would be vertical. The normal lies diagonally between. If bicarbonate be added to blood the slope of this line is not changed, or the degree of buffering is not changed. If however red cells are withdrawn from the blood, the line will have a less inclination and will approach the horizontal position. A steep line, implying a well buffered blood, will be characteristic of an individual in whom exercise produces little respiratory distress. A line of little slope we should expect to find associated with dyspnoea. It will be interesting to study the physiological and clinical aspects of variations in the slope and position of this line.

L. C. JOHNSON.

BILLINGS, F.: **The Medical Profession.** *Journal of Iowa State Medical Society*, 1922, xii, 40.

The general practitioner who is likewise the family physician is the most important factor in community welfare work. If he gives his attention to understand fully the causes of, and the prevention of disease, his education and experience enable him to comprehend readily the detrimental influence of unhygienic and poor social conditions in relation to the health of the community. His intimate relationship with his patients and his influence is of the greatest importance in health work.

*Our Present System of Medical Education.*—In the opinion of the writer the chief fault for the lack of general practitioners, lies at the door of the medical schools. In the evolution of modern medicine.



there has been an irrational coincident development of the curriculum of the medical school; at present it tends to specialism of the undergraduate student, and does not give the broad training necessary for the general practitioner.

The function of the family physician is the safe and sane treatment of the family in illness and injury and to preserve individual and community health.

*Needs of the Service as the Basis of Educational Standards.*—The general practitioner of medicine who is properly qualified, occupies a field of endeavor which affords an opportunity of service to mankind second to none to any other in the world. His life is filled with hardships, fatigue both bodily and mental, exposure to the elements, loss of sleep, and attended with great responsibility and is often ill repaid by financial reward. On the other hand it is filled with joy of service rendered alike to all, with the satisfaction which comes from intimate friendships and the gratitude of the people he serves, and the contentment of mind which is the reward of one who performs his task honestly, energetically, disregardful of the financial compensation, well satisfied with his efforts, relieved suffering and prolonged life.

*Multiplication of Effectiveness Through Coördination.*—The general practitioner may help in the program of community health in its local, district and state societies, and by coöperation among the medical men and with the lay and semimedical welfare organization, the combined influence is many times greater than that of the individuals forming the group.

*Community Health and Education.*—"Health expresses a state of being hale, sound or whole in body, mind or soul." In common usage, one thinks of health as being a condition free from physical disease or pain. All during life man is in constant combat with physical, chemical, and other forces, which modifies his well-being. Health demands not only comparative freedom from disease, but also an environment which is clean, conditions of life which are comfortable, wholesome food, provision for work and recreation, and educational advantages. The education system fails which does not add to the academic instruction, the teaching of personal general hygiene, and physical education.

*Function of Public Health Service.*—Efficiency of this work is to be measured by its results, the protection of drinking water at its

source, the establishment and enforcement of regulations for the prevention and spread of communicable disease, standardization and enforcement of regulations, which prevent the contamination of food, the establishment and enforcement of regulations insuring comfortable and sanitary homes, workshops and places of recreation and amusement and in the physical education of school children. There should be coöperation with the medical profession. "Success in public health work can be attained only by coöperation with the members of the community, and must coördinate all the activities which are utilized in health and welfare work."

*Community Interests.*—This must be aroused by the education of the people. It may be done by conferences, publicity reinforced by lectures from the pulpit, school rostrum and chautauquas, etc. Grade and rural schools afford an opportunity for the instruction of the children by simply-phrased lectures and motion pictures, and the practical examples in the causes and prevention of diseases; and the maintenance of physical health by physical drills and plays.

*Importance of Local Boards of Education and Teachers As Active Agents.*—The school teacher should be able to instruct the pupils in principles which embody well-known laws of health. All organizations should coöperate with the school authorities in carrying on this health work in behalf of the children. To be efficient, there must be little or no duplication of effort for the sake of economy of money and time, and to insure productive results. The churches must take their part in the program of health conservation.

*Relationship of the Medical Profession to Lay and Other Public Welfare Organizations.*—Formerly, organized medicine stood aloof from public welfare organizations. This attitude is difficult to comprehend. In general, one may say that in their work and point of view, medical practitioners are individualistic. The progress in relation to all activities of may and the evident need of greater activity in welfare work in city and rural districts, gradually changed the doctor's point of view.

*Erroneous Notions.*—Social medicine is read and heard of, and some doctors fear it is to dominate the field of practice. This belief is erroneous. "The most optimistic of us cannot see that the application of tried and proved measures of disease and injury prevention, or the most hoped for correction of unhygienic conditions, or the greatest possible improvement of social life will so materially dimin-



ish disease morbidity, or the incidence of injury to a degree that the medical profession will have nothing to do. Man is too immoral or too careless, indifferent and selfish to permit a millennium of health to occur."

*Leadership Logically Medical.*—The medical men should take the part of leadership in local district and state health movements, and that will place them in a position to rationally direct the health crusade. Each doctor should take an interest in and become members of lay welfare organizations, secure coöperation of the churches, business organizations, and members of the community in welfare movements which benefit the public. It lies within their province and power to associate the public mind that the community will vote to tax themselves to establish hospitals and diagnostic centers. This will enable the family physician to be more efficient for he will have all faculties for diagnosis and treatment at his command.

*A Local Program Adapted to Application Of Local Forces in Local Service.*—The medical profession coöperating the school board and school teachers will inspect, give medical care when needed, and direct the physical training of the children. These duties and obligations will not interfere with individual medical practice. He will also be aided in his work through the hospital and diagnostic center, and his own and his families well-being and happiness are promoted, with other members of the community, by this coöperative effort.

Health is the most valuable of all possessions. When it is lost, money cannot buy it. The most humble and poorest may have it if they will lead a clean life, take advantage of the facilities afforded by the state and other welfare organizations.

WIGGERS, H. H.: *Intravenous Medication with Sodium Iodid. The Eclectic Medical Journal*, 1922, lxxxii, 57-59.

Sodium iodid given into the vein has been reported as very efficient in the treatment of grippe or influenza, pneumonia, septic wounds, sinus, ethmoid and mastoid infections, orchitis, epididymitis and gonorrheal salpingitis, chronic joint infections, especially in arthritis. In a general way one might say that it is indicated in nearly all acute septic infections. Four cases are reported, the first that of an infected finger which had become gangrenous, with very

bad general condition, the second was a typical "catgut" infection, the third was an acute suppuration in a young man who had accidentally imbedded a piece of glass in his right index finger. The fourth case was that of a man with chronic ethmoiditis, in whom there was a history of syphilis. Three intravenous injections of sodium iodid were administered, with the result that there was a complete clearing up of the trouble. Upon examining the case, the nose and throat specialist, who had been treating him, could scarcely believe the wonderful results. Equally good results have been obtained in many cases of arthritis, orchitis, and epididymitis.

THOM, B. P.: **Syphilis and High Blood-pressure.** *Medical Record*, January 21, 1922, ci, No. 3, p. 89.

The blood-pressure measurements of fifty syphilitics from the municipal prisons of the city of New York are given. Of these, 25 are women and 25 are men. The Wassermann reaction was four plus in all of them. In none of them was there any noticeable cardiac or renal lesions as evidenced by the stethoscopic examination or urinalysis.

None of the women examined had reached an age when an increased pressure would be noticeable—the youngest being twenty-one years and the oldest thirty-nine years. If a pressure of 110 systolic is considered as normal for a woman of twenty years, thirteen, or 52 per cent are above normal in this series; and if a diastolic pressure of not exceeding 50 is considered as normal, the same number and percentage register above normal. It will thus be seen that more than half of these asymptomatic syphilitic females show an increased blood-pressure.

Of the men examined the oldest was forty-five and the youngest nineteen. If a systolic pressure of 120 is considered as normal for a man of twenty years sixteen, or 64 per cent are above the normal; and if a diastolic pressure not exceeding 60 is considered as normal, the same number and percentage register above normal. It will thus be seen that high blood-pressure is present in the men in an excess of 12 per cent over the women. The number of women and the number of men showing an increased blood-pressure total 29 or 58 per cent. Therefore it can be assumed that approximately one-



half or more of all syphilitics irrespective of age or sex or lack of objective symptoms show an increased blood-pressure.

The author believes that the syphilitic factor in cardiovascular disease has not been sufficiently recognized.

R. H. BENNETT.

MCCANN, W. S.: *The Protein Requirement in Tuberculosis.* *Archives of Internal Medicine*, January, 1922, xxix, No. 1, p. 33.

The technic of the management of the metabolism ward, in which the patients were kept, has been described in a paper by Gephart and DuBois:

In determinations of the respiratory metabolism the Tissot spirometer was used.

In 9 of the 10 tuberculous patients studied the minimal urinary nitrogen excretion was between 2.5 and 4.5 grams per diem, and between 0.041 and 0.093 gram per kilogram per diem. In one case the lowest excretion of urinary nitrogen was 9.4 grams per diem, or 0.267 gram per kilogram. In the nine cases with a minimal nitrogen excretion the diet had an energy value from 1.1 to 2.4 times the basal requirements of the subjects, and furnished 39 to 70 per cent of the calories in the form of carbohydrate.

In some cases it is possible to maintain nitrogen balance, and even to retain nitrogen, when from 37 to 44 grams protein are ingested, of which about one half is from animal sources. The attainment of nitrogen equilibrium with such a small amount of protein is dependent upon the ingestion of large amounts of carbohydrate and fat, sufficient to make the total caloric value of the diet from 1.7 to 2.4 times the basal energy requirement.

It is probable that the failure to establish nitrogen balance on such low protein diets is due to failure or inability of the subject to ingest sufficiently large quantities of carbohydrate and fat, rather than that it is due to an inherently large wear and tear quota in tuberculosis.

Positive nitrogen balance in bed patients may be attained by the ingestion of from 60 to 90 grams protein when the diet contains carbohydrate and fat, with caloric value of less than 1.7 times the basal requirement. The evidence indicates that the optimal quantity

of protein for patients who are confined to bed with pulmonary tuberculosis, lies between the limits of 60 to 90 grams per diem, when the caloric value of the diet is 2,500 calories. Additional carbohydrate and fat calories must be furnished when the patients are allowed to exercise.

R. H. BENNETT.

WOODSON, J. M.: **Recurrent Headaches of Obscure Origin.** *Texas State Journal of Medicine*, 1922, xvii, 442.

Nasal headache may be differentiated from those of various systemic disorders. Neck and shoulder pains, and dizziness, are sometimes of nasal origin. A slightly deflected nasal septum, especially if in the middle meatus, may be the source of the current headache, with inability to use the eyes for close work. Headache as a symptom of renal disease is relieved when the patient recovers from this systemic disorder. But headache may be a symptom of other diseases or classes of morbid conditions, which present no signs, but may be the only symptom. It is not self-limited by recovery from acute or chronic disease, but persists throughout life. Sluder says a low grade unending headache is established by closure of the frontal sinus without nasal symptoms or signs. There may be no obstruction, and it is made worse by the use of the eyes. Sometimes the eyes alone are the cause. The patients will say that they have had headaches which recur, they being present on rising, but may grow worse while using the eyes. They sometimes say they have the sensation of air rushing into the frontal sinus, after which there is a period of relief. They also tell us that they have a sensation of sand in the eyes, and refer the pain to a point back of the eyes. The "Ewing" sign of tenderness of the upper and inner angle of the orbit, pressure on touch at the thinnest part of the roof of the orbit, the floor of the frontal sinus, and the pulley for the attachment of the superior oblique muscle will be complained of. This area is used when the eyes are strained. Headache may arise from swelling or blocking of the eustachian tube from acute catarrhal otitis media. The same symptoms arise where the accessory sinuses are blocked. The blocking may produce a swelling of the soft tissues of the vault of the nose. The edema may develop into broad, based polypi, or it may subside



and return again with the recurrent coryza. Hypertrophy of the middle turbinate, may completely block the hiatus semilunaris. A positive Ewing is not found in headaches produced by maxillary, ethmoid, or sphenoid sinusitis, or in ocular, gastro-intestinal, pelvic, renal, anemic conditions, excepting empyema of the frontal sinus. The author has treated patients with recurrent headaches with applications of 2 per cent nitrate of silver solution over the middle turbinate three times a week. These applications were proceeded by a 4 per cent cocain solution and followed by a menthol spray.

STANTON, J. M.: **The Luminal Treatment of Epilepsy.** *Journal Michigan State Medical Society*, 1922, xxi, 1.

Hauptman (1912), Kutzinsky, Fuchs, and Debrowski (1914), Grinker discussing Dercum (1916), also Dercum (1919) all are favorably impressed with the use of luminal. No injurious by-effects are reported. Grinker in 1920 reported 100 cases with arrest of convulsions and in some cases freedom from attacks for from three to four years, no harmful effects being reported. Also Kirk (*Amer. Journal of Insanity*, 1921, lxvii, 559) and Sands (*Arch. Neurol. & Psych.*, 1921, v, 305) both reported good effect of this drug in reducing epileptic seizures; no ill effects reported.

Then follows several case reports, indicating that luminal is far superior to bromids, approximate dosage being 2 grains once daily; there is pronounced betterment of mental state in nearly all patients.

In the discussion that followed, Dr. R. L. Dixon emphasized that luminal therapy merely limits epileptic seizure, and is not a treatment process for epilepsy. Adverse literature describes it as a most pernicious and destructive drug. It still further depresses the mental make-up and patients lack judgment. The patient is on his way down hill anyway, and luminal kicks him further, while bromids are milder and recovery from a mental standpoint is sooner than after luminal.

Dr. P. N. Leech, of Chicago, likened luminal to veronal (phenyl-ethyl-barbituric acid and the other is di-ethyl-barbituric acid). He believes it is equally as habit-forming as veronal, which cannot now be sold in England. It would be strange if luminal did not become a habit-forming drug.

DUTTON, W. F.: **An Important Sign In the Diagnosis of Pulmonary Tuberculosis.** *Medical Record*, February 4, 1922, ci, No. 5, p. 189.

In the years from 1903 to 1913, the writer examined some 20,000 persons. A sign not previously observed was found from time to time in the examination of the lungs. After a number of years of close observation the sound was found to exist in only one condition, *i. e.*, pulmonary tuberculosis.

The sound is usually heard best in the second or third intercostal spaces anteriorly, on the side affected, between the sternal line and the midclavicular line.

The abrasion of lung tissue or infiltration on the external surface or in the parenchyma of the lung which produces this diagnostic sound does not affect or cause abnormalities of voice but affects the breath sounds of inspiration.

The abnormal respiratory sound is imitated by placing the lips and tongue in position as if to articulate the letter "T". Then make the sound "shlu" by taking a full slow inspiration in an undertone. This inspiratory sound may be continuous or interrupted so as to consist of one, two or three parts.

The author found this sign in 90 per cent of cases diagnosed as pulmonary tuberculosis.

R. H. BENNETT.

WALTON, A. J., AND MOYNIHAN, Sir. B.: **The Treatment of Gastric Ulcer.** *Lancet*, i, 1922, 267.

The surgical procedures that have been adopted in the treatment of gastric ulcer are the following: (1) Gastro-enterostomy; (2) excision of the ulcer; (3) gastro-enterostomy combined with excision; (4) gastro-enterostomy combined with destruction of the ulcer by cautery (D. C. Balfour's operation); (5) median resection of the stomach—"sleeve resection"; (6) gastro-enterostomy combined with jejunostomy (Moynihan's operation); and (7) partial gastrectomy.

When there is so much choice it is evident that no operation, has, in the popular judgment, surpassed the others in safety and success. The operation of gastro-enterostomy has been the most frequently observed of all operations. To the author gastrectomy is the most sat-



isfactory operation. He adds some figures to the statistics given in the 1920 article. Since 1909 the author has performed 118 gastrectomies, among which there were two deaths; in the same period he operated upon 651 cases of duodenal ulcer with 3 deaths. It is generally agreed that in pyloric and duodenal ulcers the satisfactory treatment is a posterior gastro-enterostomy, which in (Walton's) experience has given greater benefit than given Finney's pyloroplasty.

DALE, H. H.: **Specific Sensitiveness and Anaphylaxis.** *British Medical Journal*, January 14, 1922, No. 3185, p. 45.

Anaphylaxis is a condition produced by previous introduction into the system of a foreign protein, in which the same protein on subsequent injection acts as an acute poison. Immunity has many points in common with anaphylaxis, and the condition is due to the formation of some kind of antibody. There is a "passive anaphylaxis" due to the transfer of ready formed antibody, and corresponding to passive immunity. This passive anaphylaxis does not appear immediately, however, after the serum containing the antibody is injected, but it is not perceptible for six hours, and not fully developed for twenty-four hours. The serum of an anaphylactic animal will convey anaphylaxis but the serum of an animal immunized to a certain protein will also convey anaphylaxis, and in a much smaller dose. Also the serum of an animal sensitized against a certain protein will give a precipitin when mixed with the same protein in very high dilutions. There are strong reasons for identifying the so-called precipitin with the anaphylactic antibody, yet the serum of a guinea pig made actively sensitive to a protein forms no visible precipitate with that protein, while the animal whose serum has acquired a high precipitating quality for a protein is not anaphylactic to it, but immune. If an animal acutely sensitive to a foreign protein receives a further large injection of the serum containing precipitin for that protein, the immediate effect is not to enhance the sensitiveness, but to suppress it. A satisfactory interpretation of these facts would be that the antibody must get out of the blood and into the living cells before it can render the animal sensitive, and the formation of aggregations within these cells analogous to the precipitins in a test tube would constitute the poisonous action. Muscle experi-

ments give direct support to this conception, that anaphylaxis is due to sensitization of the cells by the presence in them of the precipitating antibody, excess of which in the surrounding fluid protects the sensitive cells, and constitutes an immunity. Simultaneous injection of antigen and antibody concerned in the anaphylactic reaction, so that they meet in the blood, has no perceptible effect of any kind. The anaphylactic poisoning reaction is practically constant in the same species. The reaction is also specific, and even discriminates between individual proteins of the same serum. In man the commonest symptoms point to an injury of capillary epithelium, leading to urticaria, swelling or pain in the joints, or facial oedema, with constitutional disturbances. The latent period is suggestive, and corresponds to the interval required in the guinea pig for the appearance of the anaphylactic condition. We are led to suspect that in this interval an antibody has been produced and located in the tissue cells the sensitiveness of which gradually rises, till reaction with some remnant of the original dose of serum-protein causes the outbreak of symptoms.

L. C. JOHNSON.

WHITE, P. D.: **The Heart in Infectious Disease.** *American Journal of Medical Sciences*, February, 1922, clxiii, No. 3, p. 335.

The heart may be permanently or temporarily damaged as the result of infections. In the group infections such as rheumatic fever, chorea, tonsillitis, scarlatina, and less often diphtheria, syphilis, pneumonia, influenza, and streptococcus septicemia are the cause. Temporary poisoning of the heart muscle may result from typhoid, pneumonia or any disease. Rheumatic fever and allied affections may cause endocarditis, myocarditis, or pericarditis, or all three. The typical lesion is the Aschoff body, or submiliary nodule in the myocardium. Diphtheria toxin, if severe enough, causes auriculo-ventricular or intraventricular bundle branch block. Disintegration of the vagus, sudden collapse with gallop rhythm and death can result. Syphilis affects the heart either by gummatous invasion of the myocardium or by arteriosclerotic changes in the aorta and coronaries or both. The Bundle of His may be involved. Typhoid fever may produce marked mottling and parenchymatous degeneration. Pneu-



monia may produce cloudy swelling of the muscle, rarely endocarditis or pericarditis. Cardiac signs are more definite than symptoms during infectious diseases. Many wrong impressions of acute dilatation during acute infectious disease, are gathered, because of uncertain percussion data, and effusions which simulate it. Prognosis is based upon cardiovascular symptoms. Therapy is divided into three groups: (1) specific, (2) good nursing, very important; (3) symptomatic. The routine giving of digitalis is unwarranted.

A. T. MAYS.

McGUIRE, L. W.: **Serum Treatment of Lobar Pneumonia.** *Boston Medical and Surgical Journal*, March 23, 1922, clxxxvi, 389.

The treatment of Type I lobar pneumonia with Type I antipneumococcic serum has proved to be of definite value. The principal reasons why favorable results are not always obtained are: (1) Serum is not used early in the disease; (2) only the very serious cases are treated by serum; (3) not sufficient serum is used; (4) pneumonia cases are not typed; (5) some use a so-called "polyvalent serum" and not a specific Type I serum. The author reports a series of 35 cases of Type I pneumonia. The average white cell count was 26,000; the average amount of serum was 205 c. c.; the average febrile period was sixty-six hours; only two deaths occurred (5.7 per cent); two had complications of empyema.

SPAETH, R. A.: **Cost of Health Service in Industry.** *The Nation's Health*, 1922, iv, 33.

"The present pamphlet published by the National Industrial Conference Board, May, 1921, records results largely from plants with organized medical departments. In the plants reporting a total of 764,827 workers were employed. Two or more plants in each of the twenty-three industries submitted reports.

"The average cost as shown by the investigation ranges from \$1.84 per employee per year in the tobacco industry, to \$24.40 in the mining industry, averaging for all industries reporting \$4.43 per employee per year.

"There has, of course, with the development of health supervi-

sion, come a much greater increase in the scope of work. While medical service was primarily developed to care for industrial accidents, the work today goes into all the departments of the plant and extends even into the home and community life of the workers.

"The report covers the cost, the staff organization, equipment and the scope of work".

RINGER, M., AND UNDERHILL, F. P.: **Studies on the Physiological Action of Some Protein Derivatives: The Influence upon Blood Concentration of Vaughan's Crude Soluble Poison.** *Journal of Pharmacology and Experimental Therapeutics*, March, 1922, xix, No. 2, p. 179.

The intravenous injection of Vaughan's crude soluble poison induces a marked concentration of the blood. Vaughan's crude soluble poison and proteoses in similiar dosages show striking resemblances in their physiological behavior both producing prolonged fall of arterial pressure, delay in blood clotting and increase in blood concentration.

C. A. SCHMID.

MUNGER, A. D.: **The Eclamptic Threshold.** *Nebraska State Medical Journal*, 1922, vii, 24.

Eclampsia arises from unknown causes, pertinent to the pregnant state, and analagous to the uremic state of nephritis, with a disturbance of proteid metabolism and the liberation of toxins into the blood stream, which are not eliminated. There is little in the literature in regard to the recognition of the pre-eclamptic state. We should not depend on the text-book teachings only, in regard to albumin casts, diminution of total solids, etc., since these conditions may be present without the least sign of trouble.

A proper history and examination will give enough information to form a prognosis. The renal findings will show two definite pathological states of metabolism:

First, the nonnephritic or the acidosis type; these cases show lowered alkalinity of the blood. Normally, 100 parts by volume of



plasma absorb 65 parts or more of carbon dioxid. When this percentage falls below 50 there is grave danger and the lower it goes the greater the danger. Since the test is too complicated for routine work, urinalysis showing the ammonia coefficient is usually sufficient.

The second class shows a damaged excretory apparatus and an early delayed elimination of chlorids. With this finding alone, even if other findings are absent, there is shown need for prophylactic measures and close observations. If we are unable to bring the total 24-hour output to a satisfactory limit, the pregnancy should be terminated. Another class of nephritic type are those in which the kidney is unable to excrete the proper volume of water. This is necessary to be recognized since we may throw more burden on the already over-burdened kidney by improper treatment. The power of the kidney to eliminate is tested by giving the patient from 1500 to 2000 mils of water in from one-half to one hour. A normal kidney can eliminate 500 mils in one-half hour, and the two liters in addition to the ordinary urine output, within 24 hours.

In the history-taking of these cases there should be careful observation made in regard to headache, disturbance of vision, as blurring of print or twitching of eyelids, disturbance of hearing, epigastric pain or abnormal nervous signs, as vertigo and dizziness, or possible edema, especially of the face. The blood-pressure should always be taken; if the systolic pressure is up to 140 it is suspicious. Added to this should be a careful laboratory examination of the 24-hour urine.

**EDITORIAL: Prophylaxis Against Typhus for Travellers.** *British Medical Journal*, March 11, 1922, No. 3193, p. 404.

One is asked with increasing frequency by patients, as to what precautions can be taken against typhus by those travelling in Poland and the Near East. Unlike typhoid fever no effective method of immunization is known, and prophylactic vaccine therapy is still in the experimental stage. Apart from the ordinary rules of hygiene, avoidance of over fatigue, filth, over crowding, and areas known to be heavily infected, the traveller must for the present rely on those precautionary measures which consist entirely in the avoidance and destruction of lice. Frequent changes of linen undergarments are de-

sirable, and a rigorous search should be made twice a day for lice. Frequent change is of benefit even if it is not possible to wash the garments, for cold and fasting are intolerable to a louse. The hair should be kept short, and baths taken when possible. Clothing can be ridded of lice by soaking for twenty minutes in a 2 per cent solution of lysol. A hot flat iron applied along the seams is effective, as also is baking, boiling, or soaking in benzene. Powdered naphthelene or in an ointment is probably the best and least objectionable of any of the antilouse applications.

L. C. JOHNSON.

HERNAMAN-JOHNSON, F.: **The Carelli Method of Perirenal Inflation.**  
*British Medical Journal*, January 21, 1922, i, 91.

"A short time ago Dr. F. G. Crookshank, physician to the French Hospital, while visiting Paris, was taken by Dr. André Leri to see a demonstration on pneumoperitoneum and the inflation of certain tissues, by Dr. Carelli of Buenos Aires. He was greatly impressed by the beautiful examples shown of gall-bladder disease, adhesions, cystic ovaries, Fallopian tube disease, and of pregnancy diagnosed at one month owing to the small but uniform increase in size of the uterus being made visible. What struck him most, however, was the entirely new procedure of perirenal inflation, an idea the carrying out of which is due to Dr. Carelli.

"Dr. Carelli has demonstrated his methods in Berlin and Vienna, and is about to do so in the United States. Dr. Crookshank urged him to visit London, and he consented, though at considerable personal inconvenience. It was arranged that he should give an account of his methods at the Royal Society of Medicine, and I was asked to place my department at his disposal for an actual demonstration of his kidney technic upon a patient. This I was most pleased to do. Dr. Carelli came to the French Hospital on December 8th, 1921, and, in the presence of several radiologists, performed a perirenal inflation.

*Process.*—"By ordinary radiography the lower half of the kidney can be shown, provided that the patient is well prepared. Under favorable circumstances, the whole organ may be distinguished, but the outline is often vague and difficult to differentiate from the surrounding parts; this is more especially the case when disease such as



nution in the inflated area. Oxygen had been used, as it was the only gas available. Dr. Carelli himself always uses CO<sub>2</sub> because it is absorbed within an hour. But for the beginner oxygen presents certain advantages.

*Summary.*—"The essential points of the technic are: (1) Use of a fine needle; (2) accurate location of the transverse process of the second lumbar vertebra; (3) proper direction of the needle after it has struck the process; (4) use of needle open so long as it is being advanced; this permits observations of punctured blood vessels; (5) sound judgment as to depth of insertion; (6) determination of entrance of needle point into perirenal tissue by manometer readings; (7) slow injection of gas; and (8) quantity not to exceed 500 cm.

"As to indications for use, any case in which there are signs or symptoms suggestive of kidney trouble, and in which clinical and ordinary radiographic examination does not completely clear up the diagnosis, should be investigated by this method. Alterations in shape, size, or density are at once made clear, also calculi too small or faint to show in the usual manner. A wide field should be the investigation of alterations in the adrenal body—thus the method is not limited to strictly urological cases, but should be used in elucidating certain disorders of the ductless glands.

"As to risks, there may be a theoretical possibility of setting up perirenal cellulitis, but no suggestion of any ill effect has occurred in Dr. Carelli's practice. On the other hand, the procedure may turn out to have therapeutic uses, on the lines of Colonel Rost's paper in the *British Medical Journal* of December 10th, 1921. Personally, having carefully considered Dr. Carelli's radiographs, and seen his procedure upon the living subject, I have no hesitation to recommending the method as one of very great value".

HUNTER, W.: "Pernicious Anemia" and "Septic Anemia". *British Medical Record*, March 18, 1922, No. 3194, p. 421.

Two forms of severe anemias are to be recognized. The one is the great hemolytic disease, termed idiopathic or pernicious anemia, and the other is a very common condition which is termed septic anemia. It is non hemolytic in character. The patient who presents the picture of a desperate anemia is really in the grip of both of the above

forms of anemia, each of them being capable of killing him, and the two combined are absolutely mortal. The two can be torn apart, by removing completely the septic anemia and its causes from the pernicious anemia patient. The particular lesion which more than any other distinctive of the hemolytic anemia is a peculiar form of "sore tongue" and hence the name "glossitic anemia" is substituted for "pernicious anemia". This disease when freed from sepsis has a milder character, and a better and milder course, and it deserves some name which will help in its diagnosis and treatment, instead of the name "pernicious" which does neither. The onset is sudden, and seasonal (July to September) and presents periodic "sore tongue", periodic "sore stomach", periodic "sore bowel" followed by periodic hemolysis and periodic anemia. There are two outstanding etiologic characters distinguishing it from all other anemias.

(1) Sex and age incidence, 71 per cent being in men, and 85 per cent of these were above 40 years of age.

(2) The marked seasonal character of its onset and of relapses, July to September. It places this disease within the category of infective diseases in such striking way, that this character of it can no longer be in doubt. No other anemia has such a character. It is only after the third attack that the disease is recognized as of the hemolytic type, and it is astonishing to note how frequently the history states that the disease "began two years ago".

Other features are, fever at the onset, followed by weakness and a lemon color; often a surprising anemia at the first with a slower and incomplete recovery from the second attack. Septic anemia is the commonest of all anemias and is usually associated with bad teeth, pyorrhoea alveolaris, or sinus infection. It is non hemolytic, and owes its character to deficient blood formation. It may be mild, or severe, frequently it exists along with and complicates "glossitic anemia". The lesions around septic teeth, the open wounds connected with septic gingivitis, the carious roots, are lesions in which the hemolytic infection of the disease also takes root, and by which its persistence in the body is favored. It incubates itself there, thence spreads to the tongue, which afterwards becomes its special seat, and thence spreads to the stomach and intestine. Therefore in this great hemolytic disease, glossitic anemia, this oral sepsis is of supreme importance. There is no safety from it in this disease except by removal of every tooth, whether good or bad, in order to remove all the



nution in the inflated area. Oxygen had been used, as it was the only gas available. Dr. Carelli himself always uses CO<sub>2</sub> because it is absorbed within an hour. But for the beginner oxygen presents certain advantages.

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forms of anemia, each of them being capable of killing him, and the two combined are absolutely mortal. The two can be torn apart, by removing completely the septic anemia and its causes from the pernicious anemia patient. The particular lesion which more than any other distinctive of the hemolytic anemia is a peculiar form of "sore tongue" and hence the name "glossitic anemia" is substituted for "pernicious anemia". This disease when freed from sepsis has a milder character, and a better and milder course, and it deserves some name which will help in its diagnosis and treatment, instead of the name "pernicious" which does neither. The onset is sudden, and seasonal (July to September) and presents periodic "sore tongue", periodic "sore stomach", periodic "sore bowel" followed by periodic hemolysis and periodic anemia. There are two outstanding etiologic characters distinguishing it from all other anemias.

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potential hemolytic infection which may be present in the septic lesions around the teeth. After the removal of the sepsis, the rapidity and degree of recovery are most remarkable. When the strictest anti-sepsis is practiced, glossitic anemia is able to manifest its own great powers for recovery, since it is freed of complicating sepsis.

L. C. JOHNSON.

KELLOGG, F. S.: **The Relationship Between Toxemia of Pregnancy and Uterine Sepsis from a Study of 400 Toxemic Cases.** *American Journal of Obstetrics and Gynecology*, 1922, iii, 366.

At a lecture in 1920, the author said that toxemia of pregnancy and uterine sepsis were the most interesting and baffling problems in obstetrics; that not even a prognosis could be made; that toxemia with convulsions occurs once in each seventy admissions at the Boston Lying-In Hospital, and that the mortality, therefore, during the last seven and one-half years was 25 per cent. He said, furthermore, that its manner of spreading was no more known now than it was at the time of Holmes and Semmelweis. He had seen five epidemics of uterine sepsis in eight years; in one instance was the Institution closed. It has been found that a certain variable percentage of uterine sepsis is due to other causes than dirty obstetrics.

The patient with toxemia of pregnancy is more susceptible to infection than a patient normally pregnant. Williams (*Obstetrics*, Second Edition, page 554) says: "In view of the marked liability of eclamptic women to infection, all operative measures must be conducted in the most rigidly aseptic manner, particular care being taken to avoid the contamination of the vagina and the hands of the operator by fecal material." The practice of obstetrics by Cragin under "Sequelæ of Eclampsies" states that patients who have had eclampsia are liable to the complications of puerperal insanity, puerperal fever on account of operative manipulations, etc. De Lee (First Edition, 1913, page 355) says "A recrudescence of the fever usually means that sepsis is starting." As a rule the case ends one way or another in three days. He says, furthermore, that sepsis is common and usually runs a severe course since the liver and kidneys are already diseased; that during the delivery of eclamptics, extraordinary precautions against sepsis must be observed, because they

are particularly liable to infection, the liver and kidneys being thrown out of immunizing action. The source of trouble sometimes is feces streaming from the anus, the result of the administration of cathartics and enemata before delivery. De Lee thinks that the anus should be closed by a circular suture, which is to be removed just before the child is delivered.

Two hundred consecutive cases from the author's material shows the relationship between toxemia and pregnancy and uterine sepsis. In 167 there was no sepsis and no toxemia, except of a mild sort, which readily yielded to medical treatment. There were slight traces of albumin or elevated blood-pressure, which was either moderate in amount, or yielded quickly. There were 15 cases of sepsis in nontoxic patients, 9 cases of toxemia unaccompanied by sepsis, 9 of sepsis and toxemia, that is 83.5 per cent were free both from sepsis and toxemia; 8 per cent were toxic, and 50 per cent of these were septic.

A series of 7,376 were studied from the Lying-In Hospital, admitted between April 20, 1912 and January 21, 1920; 400 toxemias with or without convulsions were seen, 103 with convulsions, 297 without; 5 per cent was the average of toxemias with or without convulsions; toxemia without convulsion represents 4 per cent. Of the 103, with convulsions 27 died (25 per cent); of the 27 cases with convulsions that died, 23 cases died within 36 hours of entrance. Of these 23, 20 died without further diagnosis than eclampsia, the other 3 complications were separated placenta, postpartum hemorrhage and antepartum pneumonia. Three died more than 36 hours after delivery, one from terminal bronchopneumonia plus the toxemia on the fifth day, and two of definite sepsis—one a streptococcic septicemia on the ninth day and a pulmonary embolism following uterine sepsis on the fifteenth day. In the series of fatal toxemias with convulsions, 9 per cent died of uterine sepsis, 83 per cent of eclampsia without further diagnosis and within 36 hours of entrance. Of the series of 103 toxemias with convulsions, 27 died reducing the number to 76. One of these has not been included in the study as the diagnosis was uncertain. Of the 75 cases of toxemia of pregnancy and convulsions which did not die, 17 cases had absolutely normal temperature, 39 slight elevation, 19 were definitely septic (25 per cent).

Among the toxemias without convulsions, about 18 to 20 per cent



improved enough under medical treatment to be discharged relived, and about 25 per cent improved so that they were able to leave the hospital, or were symptom-free at the time of delivery. Of the 222 cases included in the study, 14 per cent were definitely septic, 53 per cent showed slight elevation of temperature, and 34 per cent normal temperature throughout. Five cases died. This would give a mortality of 2.5 per cent of toxemias without convulsion. Only one of the five died of sepsis. This would be 0.5 per cent in contradistinction to 9 per cent of a series with conclusions. One of the five died of necrosis of the liver, one of bronchial pneumonia, one of separated placenta, one of ruptured uterus.

As to the methods of delivery, the tables show that: "(1) in toxemias with and without convulsions normal deliveries and low forceps are about one-half as frequent as in all other cases; (2) the Voorhees bag is used nine times as often in toxemias as in all other unselected cases; (3) high forceps and version are twice as common in toxemias as in all other unselected cases; (4) some form of accouchement force is fifty times as common in toxemias as in other unselected cases; and (5) vaginal cesarean is used in toxemias very much oftener, while abdominal cesarean is slightly less frequent in toxemias than in all other unselected cases. It also demonstrates that when we are forced to *accouchement forcé* or abdominal cesarean, the mortality is higher than by other methods of operative delivery not necessarily from the form of delivery, but from the severity of the toxemia, since 46 per cent of the toxemias with convulsions that died were normal deliveries or low forceps."

In the toxemias with convulsions, 38 per cent of the normal deliveries and low forceps were septic. No cases in which the bag was used were septic; "55 per cent of some form of accouchement forcé were septic; 66 per cent of the vaginal cesareans and 25 per cent of the abdominal cesareans were septic. Of all sepsis in the series 38 per cent were normal deliveries; 27 per cent were some form of accouchement forcé; 11 per cent were vaginal cesareans; 5 per cent were abdominal cesareans." These were the cases that lived.

Sepsis is four times as common in normal deliveries and low forceps if the patients have had convulsions than if she has not. Mortality in any form of *accouchement forcé* is very much higher in those who have had convulsions. It is higher in vaginal and abdominal cesarean section and very high in these methods, whether the pa-

tients has or has not had convulsions. With other methods of delivery it is approximately the same.

Roughly all toxemias are four to five times as likely to become septic as nontoxemias, unselected, with similar methods of delivery. Toxemics with convulsions that survive are fifteen times more likely to become septic with normal delivery or low forceps, than non-toxemics unselected. Toxemics without convulsions are three to four times as likely to become septic with normal delivery or low forceps, as non-toxemics unselected.

GIBBONS, R. A.: **Sterility with Reference to the State.** *British Medical Record*, March 18, 1922, No. 3194, p. 427.

Although sterility is of keen interest to the individual who is anxious to have a child, it is of more vital moment to the millions composing the state. Many years ago, when life was more simple, there was not the same desire on the part of those marrying, to prevent the advent of a family. The source of the decline of the birth rate is not increased poverty, but the propagation of the "gospel of comfort" which has become the ethical standard for all civilized nations. Since the mortality among illegitimate children is so great, it would be an advantage if an effort were made to save some of their lives, so that they might eventually become of service to the state. Looking to the amount of sterility and the enormous loss of life due to gonorrhea and syphilis, it is urgently desirable that notifications of these diseases should be rendered compulsory. We already have a distinct fall in birth rate, and by the widespread use of contraceptives, which will be constantly increasingly used, we cannot expect an average of more than two births from each marriage. Allowing for infantile mortality, those who never marry, and those who are unfit to bear children, we cannot anticipate an increase in population unless there are at least four children per marriage. When all the facts bearing on the matter are carefully considered, we must come to the conclusion that the voluntary limitation in the number of children born is the chief cause of decline. As a result of a voluntary confidential census, among "intellectuals" it was found, that of 120 marriages, 107 were "limited", and 13 "unlimited". The average number of children of each marriage was considerably under 2. Wives in



the districts of less prosperity and culture have the largest families, and the morally and socially lowest classes in the community are reproducing themselves with the greatest rapidity. The birth rate falls as income increases.

L. C. JOHNSON.

McILROY, A. L.: **Investigation of the Toxemias of Pregnancy.** *British Medical Journal*. 1922, i, 335.

It is absolutely necessary for the clinical obstetrician to have aid from expert laboratory workers. In the Royal Free Hospital, this aid is given by whole-time specialists, beginning in the antenatal outdoor clinics, where they are kept under observation continuously. If they appear to be toxemic, they are placed at rest in bed and given a carefully measured diet. The urine is collected by catheter every six, twelve, and twenty-four hours, and a specimen of the blood is also obtained. The Wassermann test is done as a routine.

*Signs of Toxemia.*—These are caused by chemical substances shown by Abderhalden as syncytial fragments found in the blood stream in pregnancy, which should be destroyed by antibodies. These are found in the blood from the sixth week of pregnancy on to delivery. As a support to this theory, there has been found in the blood stream of patients dying from eclampsia, emboli of syncytial fragments in the lungs. The main source of the toxins are the fetal placenta, normally neutralized and eliminated by various excretory channels, especially the kidneys. In nephritis, there is a condition of auto-intoxication or toxemia, which also occurs in disturbances of the liver, and the endocrine glands. As the toxins are retained in the blood, the chemical analysis of the blood is as important as that of the urine. Among these symptoms are resisting vomiting, chorea, ptyalism, acute yellow atrophy, and insanity. Eclampsia, abortion, premature births, habitual death of the fetus, etc., are also toxemic in origin. This is shown by histological evidence, especially in the condition of fibroids, which are likewise due to a toxin of the blood; the blood-vessels in this condition show some chemical irritation of their walls.

It is necessary to differentiate the toxemia of pregnancy in a

previously healthy patient from that superadded to an existing disease. This is done by careful history which may develop hepatic or renal disorders or intestinal stasis in the patient; examination for signs of focal infection; also x-ray examination of the stomach and bowel are likewise useful in suspicious cases. Endocrine changes as pigment deposit in the skin, a dry, scaly skin, a brittleness or loss of the nails, a thinning of the hair, may point to a thyroid and suprarenal insufficiency.

*Urine Examination.*—Albuminuria, a danger signal, is not always evidence of toxemia. If the amount is considerable, eclampsia, must be borne in mind. If associated with edema of the abdomen and lower extremities, it is clearly toxemic. Edema of the face and arms is found in chronic nephritis. McKenzie Wallis emphasizes the diastase content of the urine and blood, for which a test should be made; also urea concentration test by MacLean's method; also the relation between the amount of globulin and albumen in the urea output of the blood; the blood is tested for sugar, and if possible the cerebrospinal fluid also. The globulin gives a direct indication of the amount of toxin eliminated. The diastase content is found to be high in eclampsia and other toxic conditions, giving an important danger signal if this rise is rapid. A rapid rise occurs in the diastase content of the urine in congestion of the capillary tufts of the glomeruli. It is usually low in chronic nephritis. Acetone is of importance when associated with diacetic and beta-oxybutyric acids; this is constantly present in severe toxemia with albumin, but not in chronic nephritis unless toxemia is also present. The excess of acid in the blood is partly neutralized by the ammonia. Lipoid substances are found in the blood in hepatic derangements, since the liver has to do with carbohydrate metabolism.

*The Blood.*—The concentrated toxins of pregnancy cause effect on the tissues similar to some forms of snake poisons. In the blood, itself, the changes are not marked; sugar shows little change; blood diastase is unchanged in eclampsia, but increased in nephritis. A high urea content shows destruction of kidney tissue, with the probable necessity of induction of labor; if up to 0.3 per cent there is grave danger to the patient. The Wassermann reaction shows somewhat unreliable results as compared with non-pregnant cases; there



is alternating positive and negative results which do not correspond to the clinical presence or absence of syphilis.

The rise in blood-pressure give the valuable danger signal, it being a forerunner of convulsions very often in threatened eclampsia. If above 150 millimeters, there is cause for anxiety. If persisting in spite of treatment, it may be an indication for determination of the pregnancy. High blood-pressure is associated with the function of the pituitary and suprarenal glands, and also with the presence of amines.

*Tissue Changes.*—Postmortem examination of placenta in the toxemias show destruction of renal and hepatic tissue, with degenerative changes in the uterus. Gordon Ley concludes from 42 cases of hemorrhage, that this condition was due to toxemia from marked degeneration changes in the uterine wall, accompanied with areas of necrosis, and edema of the connective tissue, with a tendency to rupture. The cause of atonic postpartum hemorrhage may be found on examination of the blood and urine. The examination of the sugars in urine and blood opens up a wide field for research upon carbohydrate metabolism and toxemias.

*Treatment.*—He emphasizes the necessity of neutralizing and diluting the toxins in the serum and aiding their elimination. Protein-free diet is necessary, and even starvation in severe cases of persistent vomiting and eclampsia. There should be careful attention to the teeth, with removal of foci of infection. The use of alkaline fluids are of value. Purgation used with caution. Intestinal lavage with sodium bicarbonate 2 drams to the pint is of value, especially with the slow method of introduction. Hygiene of the skin is useful, drugs are of little value. Intestinal disinfectants as thymol, cresosote, salol, and small doses of calomel are of benefit. Veratrone, for reduction of blood-pressure, is advocated; pylocarpin has been abandoned, as it tends to edema of the lungs. Morphin is still a matter of controversy in eclampsia. In some cases of toxemia with high blood-pressure, the author obtained good results with Dover's powder in 5-grain doses. Venesection in eclampsia is of great benefit in cases of full pulse and raised blood-pressure. Severe cases of toxemia may require the interruption of pregnancy. In giving an anesthetic, the method should be determined in each individual case. Abdominal and vaginal cesarean section in selected cases.

SMITH, D. G.: *The Scope of Industrial Medicine.* Albany Medical Annals, 1922, xliii, 7.

"The war brought to industrial leaders everywhere, for the first time, the economy of conserving man power on an equal basis with machines and material."

This is best done by: (1) Selective placement for employees—not a job for man but *the* man for *the* job as determined by facts obtained as to his mental and physical fitness at initial physical examination; (2) promotion of the highest standard of hygienic surroundings; (3) provision for the re-examination of employees who, are in need of follow-up control at intervals as would be determined by nature of the disability; (4) promotion of preventive measures against industrial diseases; and (5) education, training and development in the application of the foregoing measures.

The author considers that the practice of Industrial Medicine is divided into seven chief activities:

- (1) The pre-employment physical and mental examination.
- (2) The periodic examination of employees.
- (3) The activities surrounding the works.
- (4) The prevention of occupational disease, infectious and contagious disease.
- (5) Sanitary and hygienic supervision of the plant.
- (6) Educational activities.
- (7) Research.

*Pre-employment Examination.*—If this were used to the exclusion of all but sound applicants it is a detriment to industry. If it is used as a means through which selective placement of employees is attained together with its general instructive, health-educational value to the individual applicant and for the purpose of obtaining records for protection against future medico-legal claims of accident disability, then the best interests of industry are served. The applicants may be divided into three classes.

(a) Those fit for any employment. This covers from 50 to 60 per cent of applicants who need no future attention or control.

(b) Those limited physically or mentally by disability or disease, who must be placed according to their limitations. Types of dis-



case covered in this class are: Visual defects; advanced dental caries and oral sepsis; toxic goiter; arrested tuberculosis; compensated heart lesions; cardio-vascular hypertensive disease; well-developed hernia with well-fitted truss; organic and functional nervous disease; abdominal tumors; weak back; chronic arthritis.

(c) Those physically or mentally unfit for any employment. This class covers from 5 to 10 per cent of applicants. General types of disability covered by this class are: Senility, severely impaired vision, extreme emaciation, decompensated or obviously weak hearts, aneurysm, advanced neurological conditions, open syphilis, acute gonorrhea, active tuberculosis, infectious and contagious diseases, potential hernia (dilated rings, impulse and weak walls).

This examination, carefully and conscientiously conducted, is a valuable asset to employer and employee.

*Periodic Re-examination of Employees.*—This is not meant as a routine examination of all employees, but every industry has in its personnel men whose value to the industry is indispensable, and to such men the policy of careful periodic examination is directed.

Statistics show that about 2.5 per cent of the personnel of any industry include this class.

*Dispensary Activities.*—This is considered superior to maintaining an Emergency Hospital, as being more reasonable and economic. "As a dispensary the industrial one should function second to none and should be equipped for the proper diagnosis and treatment of: (1) All minor and ambulatory surgical accident cases of company responsibility; and (2) all minor surgical and medical cases of personal responsibility for the purpose of keeping employees at their work, until such time as they can consult their own physician.

In addition the dispensary should be the base of all investigation and follow-up activities. It should be located near the center of the plant, and be appropriately labelled. Some things to be remembered are: first, the use of chemicals or medicines without adequate knowledge of the pathology of injuries of disease not infrequently leads to complications; second, amateur treatments cannot be directed to the speediest possible recovery; third, amateur, haphazard treatment discourages the reporting of injuries; and fourth, amateur treatment undermines morale. One must never lose sight of the common psychic human trait of measuring service by the price paid for it.

*Preventative Medicine.*—Ninety per cent of the activities are aim-

ed at prevention; this is not only an industrial economy but is demanded by the public of today.

*Sanitation and Hygiene.*—This service is practically self-explanatory. The best hygienic environment is determined by the quality of cleanliness, ventilation, light, heat, and humidity control, water supply and toilet facilities. Also adequate supervision must be given to conditions of restaurants, food, garbage, sewage, rest rooms, etc. It is also important to improve the personal hygiene of workers.

*Education.*—The personal contact gives an opportunity to conduct an extensive educational campaign. The higher the plane of workers the less work will be needed along this line. The channels through which this can best be done are: by individual instruction by personal contact; by training of foremen in a broader sense that is the usual standard; by educational propaganda by articles written for the usual periodicals or magazines that most industries publish; by educational propaganda delivered by attractive, interesting and instructive posters in appropriate places; and by educational lectures and talks.

*Research.*—This should be conducted along the line of study pertaining to better interests in industry and the problems which will contribute to the science of medicine.

KIDD, F.: **Tests of Renal Efficiency.** *Lancet*, April 22, 1922, ccii, No. 5147, p. 788.

Since the introduction of renal functional tests the mortality from nephrectomy has fallen from 40 per cent to 2 per cent and of prostatectomy from 30 per cent to 5 per cent. The author divides the tests into those of excretion, retention, and correlation tests or hemorenal indices.

(a) Excretion tests, as urinary gravity, urea, chlorids, phosphates, and dyes, such as indigo, carmine, and phenolsulphonaphthalein.

(b) Retention tests such as urea and nitrogen in the blood, chlorids and acidosis.

(c) Correlation tests such as determination of Ambard's or McLean's coefficient.

H. JOACHIM.



**HARTMAN, HOWARD R.:** **The Prevalence of Free Hydrochloric Acid in Cases of Carcinoma of the Stomach.** *American Journal of Medical Sciences*, February, 1922, clxiii, No. 2, p. 186.

During the past three years there have been 551 patients with gastric carcinoma and 80 with carcinomatous ulcer operated upon at the Mayo Clinic. It was found that the degree of acidity does not depend on the location of the lesion. Achlorhydria was present in a little less than half of the cases of carcinoma of the stomach. Normal or hyperacid values can be expected in more than one-fourth of the cases.

A. T. MAYS.

**JOHNSTON, R. A., AND MORGAN, H. J.:** **Acute Lobar Pneumonia and Hematogenous Puerperal Infection.** *Bulletin of the Johns Hopkins Hospital*, March, 1922, xxxiii, No. 373, p. 106.

A case is reported by the authors in which a fixed type of pneumococcus was found to be the causative agent of an endo-uterine infection which developed during the course of an acute lobar pneumonia. The patient developed pneumonia immediately after delivery. Evidence of the lowered resistance of the patient, at this time was the absence of chill and leukocytosis at the onset, and particularly the existence of a septicemia with 173 colonies per c. c. in the blood stream. Intrauterine culture yielded the same type of organism from the greenish mucopurulent discharge of the uterus. Other findings help to indicate that the uterine infection was not accidental but was a clear case of metastatic pneumonia Type I endometritis which developed in a patient suffering from an acute lobar pneumonia.

T. De F. LAYTON.

**CHAMBERLAIN, F.:** **Salvarsan Jaundice: Its Causation, Incidence and Treatment.** *Lancet*, April 15, 1922, ccii, No. 5146, p. 733.

In three years of 1200 cases of treated syphilis studied by the author there occurred 64 cases of jaundice. The cases were divided

into four groups: (1) Fifty-four cases became jaundiced some time after a course of salvarsan; (2) four cases occurred immediately after an injection of salvarsan; (3) two cases in which no salvarsan had been used; (4) four cases incidental. Out of the 54 cases in Group I, 20 followed the gavity method of administration, and 28 the syringe method. In 2 cases both methods were used, and in 4 the mode of administration is not stated. Irregularity in the interval of the treatments seems to predispose to jaundice. The time of the appearance of the jaundice after the last treatment varied from 9 to 13 weeks. To Group II probably belong those cases which give the Jarisch-Herxheimer reaction. It is probably the result of a syphilitic hepatitis. The two patients in Group III received mercury only. In Group IV the author includes cases of catarrhal jaundice. The author uses a new drug, intramine, or a sulphur derivative of the same called contramine, to counteract the jaundice or prevent its occurrence.

H. JOACHIM.

FOX, H., AND FARLEY, D. L.: **Relation of Aleukemic Leukemia, So-called Pseudoleukemia and Malignant Granuloma.** *American Journal of Medical Sciences*, March, 1922, clxiii, No. 3, p. 313.

Three cases are recorded grouped by their age, clinical course, physical appearance, and somewhat by their pathology (autopsy record in two), which had been diagnosed as Hodgkin's disease at first but by the examination of excised glands were placed among the tumors and leukemias, or so-called pseudoleukemia. Small tumors appearing early above the scapulae are more common in leukemia than in Hodgkin's disease. In the leukemic cases the discrete nodules are firm, well outlined, movable masses, not tending to coalesce, not painful or tender. Aleukemic leukemia is a systemic lymph tissue disease, like leukemia but without increased circulating leukocytes. A generalized lymphadenopathy is more suggestive of lymphogranuloma and tumors. An attempt was made to make an antigen for specific protein skin tests in lymphatic diseases but was without success.

A. T. MAYS.



MARSH, P. L., NEWBURGH, L. H., AND HOLLY, L. E.: **The Nitrogen Requirement For Maintenance In Diabetes Mellitus.** *Archives of Internal Medicine*, January, 1922, xxix, No. 1, p. 97.

This work was undertaken in an effort to determine the minimum protein ingestion that will safely maintain nitrogen balance in patients with diabetes mellitus.

The usual method of determining the state of the nitrogen equilibrium was followed, namely, the balancing of the nitrogen in the food against the nitrogen in the stools and urine.

It is an established fact that nitrogen balance may be maintained on less than 0.66 gram protein per kilogram of body weight per day, provided certain other conditions are satisfied.

The conditions necessary for the establishment of nitrogen balance at this low level are several. Chief among these is the presence of sufficient total calories in the ingested food; there must be enough fat or carbohydrate in the diet to supply all the body needs for heat and energy, so that the protein may be used only for restoring body tissue. Carbohydrate is more efficient than fat in sparing protein. Fat alone will not decrease the amount of nitrogen found in the urine of a fasting animal. It is generally believed that fat in low protein diet loses part of its effectiveness when the carbohydrate calories fall below 10 per cent of the total calories.

It is also of great interest in connection with diabetes to note that in an animal possessing body fat, fat in the diet does not bring about any change in the amount of fat metabolized. The same amount of fat is burned whether it is derived from the body or from the diet.

The amount of work done by the subject obviously influences his caloric needs. On the other hand work does not increase the rate of protein metabolism when the energy is supplied from other food stuffs. If the subject is in nitrogen balance, the calories required for energy for work may be added as fat or carbohydrate.

In the formation of diets the age of the subject must receive consideration. The total caloric requirement of children is much greater in proportion to size than that of adults.

The weight of the subject is of importance in giving a basis on which to calculate his nitrogen requirements and, roughly, his total diet.

It is seen that the normal subject may be maintained in nitrogen

balance on less than 0.66 gram protein per kilogram of body weight, provided that the total caloric intake is sufficient to supply heat and energy. The laws governing protein metabolism of normal subjects have been stated. The question then arises as to whether or not these facts apply equally to diabetics.

The urines of thirteen fasting diabetics were collected in the morning and the hourly rate of excretion of nitrogen per kilogram of body weight determined. The average of all determinations was 8.4 mg. nitrogen per kilogram of body weight per hour. In a series of fourteen normal subjects the average excretion per kilogram of body weight per hour was 6.8 mg. Five of the diabetics excreted less than the average of the normals. The fact remains however, that the average of the diabetics was higher than the average of the normals, and four of the diabetics eliminated more nitrogen than the highest of the normals. It will be noticed that in general the more poorly nourished have the highest rate of nitrogen excretion.

The average nitrogen excretion of seven patients showing the least loss of weight was 6.6 mg. per hour (the controls 6.8 mg.). The average of the other six was 10.3. The proper explanation of these figures seems to be that, whereas none of the fasting patients could supply fuel for energy from the store of body carbohydrate, some had sufficient store of fat to serve the purpose and to render it unnecessary for them to burn protein for fuel. These determinations offer further evidence of the ability of fat to save protein in the diabetic. The results are what one would predict from the laws of normal metabolism; they give no evidence of abnormal protein metabolism in the diabetic.

A table is given containing a series of twelve cases in which nitrogen balance was established. All the diets in this series contain an average of 6.8 grams protein per kilogram of body weight. This figure agrees with those found on normal subjects, and demonstrates that the diabetic patient may be maintained in nitrogen balance on as low a protein ration as the normal subject. The average number of calories per kilogram of body weight given to this group of patients was 33.5 calories and of these an average of only 3.8 per cent were in the form of carbohydrate. The fat in grams is ten times the carbohydrate in grams, or if the 58 per cent of the carbohydrate that may be added from the protein be added, the weight of the fat is four and one-half times that of the total carbohydrate. The carbohydrate



calories are 3.8 per cent of the total calories, or, if the protein carbohydrate be added, the total carbohydrate calories are only 8.6 per cent of the total calories. Nitrogen balance can be established in the diabetic on diets low in protein whose energy is chiefly contained in fat.

To this law there is an exception. A diabetic who has lost the ability to burn both carbohydrate and fat is inevitably thrown back on protein as a source of energy. These cases are very rare.

R. H. BENNETT.

KEILTY, R. A.: **Addison's Disease: A Case of Tuberculosis of the Adrenals.** *American Journal of Medical Sciences*, February, 1922, clxiii, No. 2, p. 282.

The patient was a principal of a high school, 43 years of age and complained of malaise, increasing during the last 6 weeks of his illness. Previously he had many attacks of tonsillitis. He never had pain. The illness dated back about one year, with symptoms of dizziness, faintness, and weakness increasing slowly. The exposed parts of the skin were pigmented dark brown, both nipples showed dark brown pigmentation. The urine showed occasionally a faint trace of albumin. The blood showed an anemia with tremendous aneboid motion. Blood-pressure was 84/58. X-ray of the chest showed definite tuberculous infiltration with several tubercles at each apex. At autopsy the case presented a typical localized and focalized tuberculosis of both adrenals, with an arrested pulmonary apical tuberculosis of a probably unassociated nature. The direct smear from the adrenals showed the presence of tubercle bacilli in large numbers. They were also found in the spleen. Animal inoculation with crushed material from the adrenal produced experimental tuberculosis from which tubercle bacilli were obtained in culture.

A. T. MAYR.

PHILIP, SIR R.: **Tuberculosis of the Lymphatic System.** *British Medical Journal*, January 28, 1922, No. 3187, p. 129.

The author commends the prolonged observation of cases, not for weeks or months, but, as he has done, from the initial lesion, through

its later developments throughout the patient's life. These facts checked by animal experiments are most enlightening. Inoculation of the human subject by the tubercle bacillus occurs by varying channels, but the greater vulnerability of the mucous membranes of the pharynx and oesophagus should be kept in mind. Following the primary incubation period and local lesion, there is a second incubation period during which the gradual spread of the infection by the lymph stream takes place. In the experimental animal, there is first enlargement of the lymph glands adjacent to the site of inoculation, followed by extension to other gland groups. The commonly occurring change in the glands is infiltration, and induration, with seldom grosser disturbance. In this manner infection spreads quietly from point to point, and the glandular changes are so slight as to readily escape notice. There is too little consideration of this steady passage of tuberculous infection. In case of gross enlargement of a gland, exacting search should be made as to the condition of the adjacent and remote groups. Operative treatment should be limited to emergencies, such as deformities or the removal of a softening gland. No extensive excision should be made. The best treatment is the use of tuberculin, either by injection, or by inunction. The author has repeatedly observed not only marked changes in the glands most involved, but also in the glands more remote. This local improvement is accompanied by the same general improvement of the patient.

L. C. JOHNSON.

WALKER, K. M.: **Ascending Infections of the Kidney.** *Lancet*, April 8, 1922, ccii, No. 5145, p. 684.

Twenty years ago renal infection was considered to be an ascending infection directly along the ureter. Recently it has been demonstrated by Baureisen, Draper and Braasch that this mode of infection is the exception and that the usual route is by the blood stream. The author considers another route, that by way of the peri-ureteral lymphatics.

The author repeated and confirmed Blandini's experiments of inoculating the urethra of guinea pigs with *B. prodigiosus* and then recovering the same from various parts of the urinary apparatus.



The same experiments were carried out with inorganic substances such as ferrous carbonate. Carmine was also used. These were likewise recovered from the upper end of the ureter. Granules were discovered in the lymphatics about the ureter. While they could not be demonstrated in the kidney substance proper, they were seen lying in the capsule. The ureter on one side was then separated from its lymphatic supply and ligated. The urethra was then inoculated and the organisms were again recovered from the upper end of the ureter and from the kidney capsule. If the infection by means of the lymphatics was exceptionally virulent, the blood stream became infected and the kidney was secondarily involved by the hemotogenous route. A patient operated on for a prostatic infection was then studied post-mortem and similar findings to the experimental guinea pig inoculations were observed.

The renal lymphatics communicate with those of the diaphragm, colon and female genitalia.

H. JOACHIM.

BANTING, F. G., BEST, C. H., COLLIP, J. B., CAMPBELL, W. R., AND FLETCHER, A. A.: **Pancreatic Extract in the Treatment of Diabetes Mellitus.** *Canadian Medical Association Journal*, March, 1922, xii, No. 3, p. 141.

In 1889 Minkowski, Von Mering and others have produced severe and fatal diabetes by total removal of the pancreas in dogs. Feeding such depancreatized dogs with extract of the pancreas or whole gland whether given per os, subcutaneously or intravenously was followed by no success and proved even harmful. The authors conceived the idea that the extract of the pancreas, as usually prepared did not satisfactorily demonstrate the presence of an internal secretion, acting on carbohydrate metabolism, as these principals were destroyed by the digestive enzymes also present in such extract. By later experiments it was shown that pancreas of fetal calves of under five months development did not contain the proteolytic enzymes. By extracting such fetal pancreatic tissue a highly potent preparation was obtained. Daily injection of such extract in completely depancreatized dogs prolonged their lives to seventy days, while, according to Allen, completely diabetic dogs do not live over fourteen days; the

respiratory quotient was markedly raised, as well as their tolerance for carbohydrate food. The effect observed on these animals has been paralleled in man.

In all, seven cases of diabetes of varying severity were studied. These patients were placed on a constant diet and the results of dietetic treatment were studied for one week. All the clinical examinations were made by the standard methods, frequently repeated. Blood sugar, urinary sugar, acetone bodies and respiratory quotients noted. Then the pancreatic extract was administered with the following results:

(1) A fall in blood sugar (after repeated examinations) occurred in all cases.

(2) Coincidentally with the above a rise in the respiratory quotient was noted.

(3) Urinary sugar markedly decreased, and with adequate dosage the urine became sugar free.

(4) Ketonuria (present in four cases) was abolished.

(5) A marked subjective and objective improvement in all cases.

(6) No ill effect followed the medication (subcutaneously).

From clinical observations the authors feel that the following conclusions are justifiable:

(1) Blood sugar can be markedly reduced, even to normal values.

(2) Glycosuria can be abolished.

(3) Ketonuria made to disappear.

(4) Respiratory quotient can be raised.

S. CHES.

Foot, N. C.: **Pathology of the Dermatitis Caused by *Megalopyge Opercularis*, A Texan Caterpillar.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 737.

The *Megalopyge opercularis*, locally known as the puss-caterpillar, opossum bug, and Italian asp, is a small larval moth, which has been causing dermatitis in southern Texas for the past decade. The larva is capable of inflicting stings resulting in severe local and general reactions. The dermatitis is produced by a poison, which ap-



pears to be of the nature of a venom, introduced by the hollow specialized setae of its cuticular tubercles. The poison is rendered inert by boiling or by heating to 55° C. for a considerable time. It is stored in sacs at the base of the setae. Skin sections from a dermatitic area showed fragments of setae embedded in the epidermis. None of them penetrated to the corium, yet the latter showed marked pathologic changes. The corium is edematous, and almost every blood vessel is surrounded by an exudate of lymphocytes, eosinophils, and endothelial and polymorphonuclear leukocytes. The lymphocytes outnumber the other cells very noticeably; the eosinophils are next in frequency. The lumina of the capillaries show many lymphocytes and eosinophils, and those of the lymphatic system are sometimes almost clogged with the former.

H. M. FEINBLATT.

NORRIS, G. W.: **The Cause and the Control of Dyspnea in Disease of the Lungs.** *American Journal of Medical Sciences*, February, 1922, clxiii, No. 2, p. 157.

Dyspnea occurs if the hydrogen ion content of the blood is raised by (a) carbon dioxide and (b) lactic and other acids of metabolism. Dyspnea resulting from lack of oxygen is less important. Cardiac efficiency is always to be considered on account of its close relation to pulmonary ventilation. In orthopnea the patient is more comfortable in the erect position because it favors blood return from the cerebral vessels, enlarges the thorax, and increases reserve of air. By "the dead space" we understand the whole of the respiratory passages into which air is inhaled during respiration except the alveoli of the lung—nose, mouth, trachea, bronchi, etc. It is large in shallow breathing, and small in deep breathing. In normal resting subjects it is 120 to 140 c. c. Pulmonary ventilation is regulated by afferent nervous stimuli (vagus) and chemical factors. Dyspnea in pneumonia may result from (1) pain (causing anoxemia), (2) extensive consolidation, (3) excessive bronchial secretion, (4) edema, (5) pleural or pericardial effusion, (6) acidosis. The whole lung may be solidified and thereby the arterial stream contains venous blood, causing cyanosis but the sound lung is still able to eliminate sufficient carbon dioxide to prevent dyspnea. There may be no

cyanosis in a large pleural effusion (throwing one lung out) because the completeness of the atelectasis shuts off the blood supply and no venous blood reaches the arterial stream. Cyanosis always indicates anoxemia, and this causes shallow and accelerated respirations, whereas excess of  $\text{CO}_2$  produces deep respirations. Pulmonary edema diminishes pulmonary ventilation by increasing the dead space. Pain is relieved by strapping, opiates, dry cupping, or an ice bag. In pulmonary edema chief reliance is placed on digitalis, atropin, and phlebotomy if there is venous enlargement, and dry cupping may be considered. The use of oxygen is best given by means of a rubber tube inserted into the nostril. Pneumonia patients, if obese, with more or less emphysema, or a cardiac lesion, may be propped up in bed to lessen dyspnea, without harm. Dyspnea in pneumothorax is not due to the lack of function of the affected lung but to the displacement of the mediastinal viscera and interference with expansion of the sound lung, thus lessening pulmonary ventilation.

A. T. MAYS.

SHARP, W. B., NORTON, J. F., AND GORDON, J. E.: **A Sore Throat Epidemic of Unusual Type. Influenza Studies. VIII.** *Journal of Infectious Diseases*, April, 1922, xxx, No. 4, p. 372.

The data here presented show the occurrence of a sore throat epidemic of an unusual clinical type. A hemolytic streptococcus and a Type 4 pneumococcus were found simultaneously in the tonsillar regions of a group of children with the symptoms described. The streptococcus was of an unusual cultural type, belonging to Holman's Group *S. infrequens*. The hemolytic streptococcus is known to be at times the etiologic factor in sore throats. That the Type 4 pneumococcus present in this group might be pathogenic is suggested by its presence unaccompanied by hemolytic streptococci in one case of acute inflammation. One of the most striking features was the carrier condition. It is impossible to say how long this was maintained, but in five of eight instances it persisted for not less than eight weeks as shown by finding immunologically identical organisms continually on the tonsils during this period. Hemolytic streptococci were found after 12 weeks. The proportion of hemolytic streptococci in the tonsillar flora as indicated on blood agar plates



varied considerably, some examinations being negative. The finding of specific strains of hemolytic streptococci and of Type 4 pneumococci biologically identical with those from the group of children intensively studied, in convalescents among high school students and in children in other grades of the elementary school, indicated the prevalence of these organisms throughout the whole school. The possibility of contact among the children existed and was substantiated by certain well established instances. The persistence of clinical symptoms closely paralleled the occurrence of the two specific strains of the organisms. This epidemic may have been caused by one of the organisms isolated or by their simultaneous action.

M. M. BANOWITCH.

**RACKEMANN, F. M.:** Skin Tests with Foreign Proteins in Various Conditions. *American Journal of Medical Sciences*, January, 1922, clxiii, No. 1, p. 87.

Nine hundred and thirty-nine patients presenting various clinical conditions were studied. The skin tests were made by the cutaneous method—using the protein in some of the common foods as well as in animal dusts and danders. All were obtained from the Arlington Chemical Laboratory. Multiple tests are commonly obtained with several of the proteins in any one group, but also obtained with proteins in other groups. In any given case a wide variety of tests should be done. A better method of excluding proteins is to so limit the patient's diet and life that, as far as possible, contact with proteins is limited to those represented by the negative tests found. Emphasis is placed upon the necessity of a fairly gross interpretation of any positive test.

A. T. MAYS.

**BENNETT, T. L., AND DODDS, E. C.:** Secretion into the Stomach and Duodenum: With Special Reference to Diabetes Mellitus. *British Medical Journal*, January 7, 1922, No. 3184, p. 9.

In a fasting subject, at rest, the alveolar  $\text{CO}_2$  tension, is constant to within 0.5 mm. Hg. If the fasting subject be given a meal, the

tension rises 3 to 5 mm. within the first hour; it then falls to the original level, and from 3 to 5 mm. below; it then rises to the original level and remains there until another meal is taken, the return to the original level occurring in something over 2 hours, after the meal is taken. The same test in an individual who had had gastrectomy performed, shows no increase in tension after taking the meal, but the fall following the rise in the normal individual still persists. Since the secretions of these organs are derived from the blood supplying the glands of the alimentary canal and since the tendency of the body as a whole is to maintain the reaction of the blood at a constant level, it is reasoned, that the outpouring of HCl into the stomach would tend to shift the blood reaction to the alkaline side and that CO<sub>2</sub> is retained in the blood stream to make up for the acid loss. For the same reason, later in the intestinal juices alkali is withdrawn from the blood stream, less acid is required, to maintain neutrality, and there is consequently a lower CO<sub>2</sub> tension. The alkali is secreted into the intestine, from the liver, the mucous membrane of the small intestine, and the pancreas. The bulk of the alkali however has been shown to be contained in the pancreatic secretions, and a case reported here of chronic pancreatitis, which was proven surgically, showed a very slight drop in tension as compared to the normal. Lavage of the stomach with a weak atropin solution will inhibit the secretion of acid, as proven by withdrawal of contents, and if then a meal be given, the rise in CO<sub>2</sub> tension does not occur, but the later fall in tension is not disturbed. If the duodenum be so treated, and food introduced into the duodenum, the fall in tension is inhibited, but it does not affect the rise in CO<sub>2</sub> tension when food is introduced into the stomach. In a fasting subject, lavage of the stomach with atropin solution causes the fasting level of CO<sub>2</sub> tension to fall to a lower level, while lavage of the duodenum with atropin solution causes the level of alveolar CO<sub>2</sub> tension to rise to a higher level. The fasting level of alveolar CO<sub>2</sub> tension then, represents a balance between the continuous loss of acid by way of the stomach, and the continuous loss of alkali by way of the duodenum. The alveolar CO<sub>2</sub> tension curve in six severe diabetics shows a slight rise but less than normal, and then a very marked fall, which lasted for a longer interval than in the normal individual. Diabetics who were sugar free and who had a fair degree of sugar tolerance, showed alveolar CO<sub>2</sub> tension curves the same as normal



individuals. This great fall in the severe cases is assumed to be due to an actual hypersecretion on the part of the pancreas, but thus far it has not been possible to measure this. It has been pointed out by Allen and others, that the internal secretion of the pancreas is inversely proportional to its external secretion, and this is the basis for treatment of these cases by "alimentary rest". The belief is expressed that a hypersecretion on the part of the pancreas is not in discord with existing clinical and laboratory data, though the conception itself be a novel one.

L. C. JOHNSON.

BLACK, D. R.: **The Urea Concentration Test.** *American Journal of Medical Sciences*, February, 1922, clxiii, No. 2, p. 218.

Fifteen cases of so-called "essential hypertension", ambulatory patients were chosen for observation whose blood urea did not exceed 20 mg. per 100 c. c. The details of the test are as follows: The patient urinates and at once takes 15 grams (231.48 grains) of urea dissolved in 100 c. c. of water. One hour and two hour specimens are voided and the percentage of urea taken in all three specimens. If the percentage of urea exceeds 2 per cent the kidney may be considered fairly efficient; if below 2 per cent, some disturbance is present. Cases with a concentration below 1 per cent are rare but many cases show concentration of only 1.5 per cent. The lower the concentration the more serious the lesion. Mosenthal's two hour specific gravity test also gave valuable aid in determining kidney function. The term essential hypertension should be limited to those cases in which every available function test has proved normal.

A. T. MAYR.

## SECTION ON LABORATORY AND RESEARCH

MULLER, J. H., AND ISZARD, M. S.: **Erythropoietic Action, Cumulative Effect and Elimination of Germanium Dioxid.** *American Journal of Medical Sciences*, March, 1922, clxiii, No. 3, p. 364.

A series of tests was carried out on the guinea-pig, rabbit, dog, and man for the purpose of finding out the erythropoietic action of germanium dioxid on animals other than the albino rat; the toxic effect of large doses; the cumulative effect of the compound in the system; the elimination of the compound from the system. It was concluded that large doses are toxic, and it is calculated that the lethal dose is about 586 mg. per kilo of body weight. The toxic action is possibly due to an overstimulation of the blood-forming organs. A quantitative method is devised by the authors for the determination of germanium dioxid in animal tissues and excreta both in the presence and absence of arsenic, which is found to be accurate. Germanium dioxid does not accumulate, but is eliminated through the kidneys and alimentary tract.

A. T. MAYS.

OLIVER, J., AND DOUGLAS, E.: **Biological Reactions of Arsphenamin.**  
**I. The Mechanism of Its Agglutinative Action on Red Blood Cells in Vitro.** *Journal of Pharmacology and Experimental Therapeutics*, March, 1922, xix, No. 2, p. 187.

Arsphenamin has a fairly constant agglutinative titer for red blood-cells. The cells of different species vary somewhat in their agglutinability. Human cells are most strongly acted upon, chicken cells the least. There is a drop in the titer of salt solutions of ar-



sphenamin as they stand in the open air. Arsphenamin is absorbed by the red cells, but no agglutination occurs except in the presence of an electrolyte. A physical change in the degree of dispersion of arsphenamin results when electrolyte is added to arsphenamin in solution. It is suggested that the action of the electrolyte in the agglutination process is due to this action on the absorbed arsphenamin of the "sensitized" cells.

C. A. SCHMID.

OLIVER, J., AND YAMADA, S.: **Biological Reaction of Arsphenamin. II. The Protective Action of Hydrophilic Colloids on the Agglutination of Red Blood Cells by Arsphenamin.** *Journal of Pharmacology and Experimental Therapeutics*, March, 1922, xix, No. 2, p. 199.

The agglutination of red cells by arsphenamin is inhibited by many hydrophilic colloids. The protective power of certain such substances studied corresponded roughly with their efficiency as expressed by their "gold number". Both phases of the process of agglutination are effected in their inhibition, both the union of the arsphenamin with the red cells and the action of the electrolyte with the arsphenamin. The adsorption phenomena between the protective colloid and the arsphenamin will explain the lack of reaction of the latter with both the other elements, cells and electrolyte, which is necessary for agglutination.

C. A. SCHMID.

GOLDBERG, M., AND GUNN, J. W. C.: **The Action of Salicylates on the Uterus.** *Journal of Pharmacology and Experimental Therapeutics*, April, 1922, xix, No. 3, p. 207.

Salicylate of sodium has stimulating action on the uterus, but usually only in concentration higher than those found in the blood during the treatment of rheumatic fever. From a consideration of the experiments it is suggested that abortion occurring in rheumatic fever is the result of the fever, and that salicylates have probably little effect unless the uterus is specially sensitive.

C. A. SCHMID.

YABE, S.: **The Action of Diphtheria Toxin upon the Circulation.** *Journal of Pharmacology and Experimental Therapeutics*, February, 1922, xix, No. 1, p. 1.

The effects of diphtheria toxin on the circulation and respiration of cats used in the experiment, only appear after many hours of its injection, even when the dose is many times that ultimately fatal if injected intravenously. All attempts to analyze its action in acute experiments are therefore futile, and further light can be thrown on its effects only by examining the conditions of the animals subjected to it many hours previously and comparing their symptoms with those of the controls. In a series of such experiments, the blood pressure was found to be lower than in the controls and this appeared to be due to failure of the central vasomotor mechanism. No evidence of direct action on the peripheral vasoconstrictor nerves, or on the vessels of the heart, was obtained.

C. A. SCHMID.

STEWART, G. M., AND RUGOFF, J. M.: **The Action of Drugs on the Output of Epinephrin from the Adrenals (Morphine).** *Journal of Pharmacology and Experimental Therapeutics*, February, 1922, xix, No. 1, p. 59.

Morphin, administered subcutaneously or intravenously, causes in cats an increase in the rate of output of epinephrin from the adrenals. As much as 10 times the initial rate has been observed. The animals were anesthetized with ether (in one experiment with urethane) before the morphin was administered, and therefore it is not known what increase may be caused in the absence of these anesthetics, which do not themselves appear to increase the output. The symptoms produced by morphin in non-anesthetized cats cannot be due, in any important measure to an increased output of epinephrin, since they are all obtained, and apparently in undiminished intensity, in cats after removal of one adrenal and the chief part of the other, and the denervation of the remaining fragment. In dogs either no increase in the output of epinephrin or a very slight one was caused by morphin. The difference in the action of the drug in the two animals is as marked as the other pharmacological differences.

C. A. SCHMID.



RINGER, M., AND UNDERHILL, F. P.: **Studies on the Physiological Action of Some Protein Derivatives: The Relation of Blood Concentration to Peptone Shock.** *Journal of Pharmacology and Experimental Therapeutics*, March, 1922, xix, No. 2, p. 163.

The experiments which were performed on full-grown and well-nourished dogs, point out quite clearly the marked resemblance between the effects of "Witte peptone" and those evoked by histamine and it is quite apparent that the experimental results with "Witte peptone" apply with equal force to histamin. One point of difference, however, seems to be indicated, namely, that the period of high concentration with histamine appears to be shorter than with peptone, that is, there is a decided tendency for blood concentration in histamine shock to quickly descend to the normal level whereas in peptone shock this rarely occurs. May this indicate that the damage to the capillaries in peptone shock is greater than with histamine intoxication, hence resumption of normal conditions is slower?

C. A. SCHMID.

STURGIS, C. C., PEABODY, F. W., HALL, F. C., AND FREMONT-SMITH, F.: **Clinical Studies on Respiration. The Effect of Reduction of Vital Capacity of the Lungs on the Maximum Minute volume of Pulmonary Ventilation and on the Production of Dyspnoea.** *Archives of Internal Medicine*, March, 1922, xxix, 277.

Two subjects were studied while walking upstairs on a treadmill. One set of experiments on each of them was carried out in the normal state, and one set when the vital capacity was reduced to about one half by means of a tight chest swathe. The wholly artificial condition this produced is not unlike that in a case of pleurisy with effusion and simulates in some degree other conditions, such as heart disease, in which the vital capacity of the lungs is below normal. The calculated maximum minute-volume was, of course, much less in the experiments with the chest swathe than in those in which the vital capacity was normal and it was found that the tendency to dyspnea varied closely with the percentage of the calculated maximum minute-volume that was being used in respiration. When the minute-volume breathed was only 25 per cent of the maximum, the subject was not

conscious of his respiration; when it was 50 per cent he noticed that he was breathing deeply, and when it was 75 per cent of the maximum he was frankly short of breath. These experiments, therefore are of interest in that they bring out the importance of the conception of the maximum minute-volume of the pulmonary ventilation as one of the factors which determine the occurrence of dyspnea in various clinical conditions. This factor can be expressed in a sufficiently accurate quantitative manner and it has a broader physiologic significance than has the determination of the vital capacity of the lungs alone, for the minute-volume of pulmonary ventilation bears a close relationship to those fundamental processes of the body which go to make up what is known as the metabolism. The essential cause of the variations which may occur in the maximum minute-volume is an alteration in the vital capacity of the lungs and this may, therefore, be regarded as a practical index of the maximum minute-volume.

R. H. BENNETT.

DEKRUIF, P. H.: **Virulence and Mutation of the Bacillus of Rabbit Septicemia.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 621.

Two types of the bacillus of rabbit septicemia have been shown to possess greatly differing degrees of virulence. Type G, of low virulence, has been demonstrated to rise as a mutant from the primordial highly virulent Type D. In order to study the fixity of the character of virulence of the two types, the author injected varying amounts of 6 hour 10 per cent rabbit serum broth cultures intrapleurally into young rabbits. The virulence of Type D remained at a very high level over a comparatively long period of time. The time of death of the test animals showed very little variation (12 to 15 hours). Subcultures from this strain likewise showed very little variation in virulence. The virulence of Type G lacked this fixity and could be raised to a considerable titer by animal passage. Microbe D owes its superior invasive power at least in part to its anti-phagocytic activity, a property apparently not possessed by Microbe G.

H. M. FEINBLATT.



LORD, F. T., AND NYE, R. N.: **Studies of Pneumococcus. III. Dissolution of Pneumococci in Pneumonic Cellular Material at Varying Hydrogen Ion Concentrations. Resistance of Certain Other Organisms to Dissolution.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 699.

In order to determine the effect at varying hydrogen ion concentrations of cellular material derived from the pneumonic lung on pneumococci, the cellular material derived from the mash of a pneumonic lung was set up with suspensions of Type I, II, and III pneumococci. All three types underwent dissolution at a pH of 5.5 and 6.95, but not at a pH of 4.5. *Streptococcus hemolyticus* and *viridans* did not undergo dissolution under similar experimental conditions. An enzyme derived from the bacteria themselves or from the cellular material may be the cause of the dissolution.

H. M. FEINBLATT.

GATES, F. L.: **Collodion Sacs for Aerobic and Anaerobic Bacterial Cultivation.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 635.

In the use of certain media which contain a combination of ascitic fluid or dilute blood serum and a fragment of fresh animal tissue, a disadvantage is found in the presence of a protein precipitate derived from autolysis of the tissue fragment. This precipitate may obscure the view and either simulate or mask the presence of significant bodies. Furthermore, the antigenic protein precipitate makes tissue cultures unsuitable for the production of immune serum or for serologic studies in general, because it gives rise to unspecific reactions and so complicates the results. To obviate these difficulties it was proposed to confine the tissue medium in a collodion sac surrounded by distilled water or salt solution, with the prospect that the nutritive and growth-promoting substances would diffuse through the sac wall and support growth in the surrounding fluid. A simple and convenient method is described for the preparation and use of these collodion sacs. They are especially useful in the study of spirochetes, the globoid bodies of poliomyelitis, and the *bacterium pneumosintes*.

H. M. FEINBLATT.

CARREL, A., AND EBELING, A. H.: **Heart and Growth-Inhibiting, Action of Serum.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 647.

The plasma or serum obtained from an adult animal restrains the growth of a pure culture of homologous fibroblasts. This restraint first manifests itself a few weeks after birth and becomes progressively stronger in adult life. Experiments were instituted to study the modifications in the rate of growth of fibroblasts when the serum composing the culture medium had been heated at various temperatures. The serum was obtained from the plasma of chickens about one year old which had fasted for twenty-four hours. The fibroblasts were taken from a stock culture of a nine year old strain of connective tissue.

The results obtained in the experiments may be summarized as follows: The action of heat at  $56^{\circ}$  C. increased by 15 per cent the inhibiting action of serum obtained from young adult chickens on the proliferation of fibroblasts. The action of heat at  $70^{\circ}$  C. increased the inhibiting action by 34 per cent. When the serum had been heated at  $100^{\circ}$  C. its inhibiting action became about equal to that of unheated serum.

H. M. FEINBLATT.

LORD, F. T., AND NYE, R. N.: **Studies on the Pneumococcus. I. Acid Death-Point of the Pneumococcus.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 685.

In the growth and death of the pneumococcus in fluid cultures containing one per cent glucose the production of acid is the most important bactericidal factor. Such cultures when allowed to grow and die out usually reach a final pH of about 5.1. Experiments with Types I and II pneumococci showed that at a pH of about 5.1 or lower the pneumococcus does not survive longer than a few hours; at a pH of about 6.8 to 7.4 the pneumococcus may live for at least many days, and in the intervening solutions, between 6.8 and 5.1, the organism is usually killed with a rapidity which bears a direct relation to the hydrogen ion concentration; i. e., the greater the acidity the more rapid the death.

H. M. FEINBLATT.



BROWN, J. H.: **The Vaseline Tube and Syringe Method of Micro Gas Analysis of Bacterial Cultures.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 667.

During a study of anaërobic bacteria, use was made of small amounts of media covered by vaseline in test-tubes. It was noticed that as gas was formed by a culture the vaseline was forced up the tube, the vaseline plug remaining perfectly intact and acting as a self-lubricating piston at the temperature of the room or incubator. A record of the amount of gas present above the medium may be made at any time by marking with a wax pencil on the side of the tube the lower level of the vaseline plug. To measure the amount of gas in the tube a device somewhat like the Frost gasometer for the Smith fermentation tube is used. By means of a Luer tuberculin syringe with a long fine needle attached by means of a short length of capillary rubber tubing a sample of gas may be withdrawn and the  $\text{CO}_2$  determined in the syringe.

H. M. FEINBLATT.

FISCHER, A.: **Action of Antigen on Fibroblasts in Vitro.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 661.

It is known that tissue cells cultivated outside of the organism are able to produce antibodies against a given antigen when it is added to the medium. Experiments were instituted to investigate the action of an antigen on the rate of proliferation of fibroblasts. The tissues used were taken from a nine year old strain of fibroblasts. The foreign protein was human ascitic fluid. It was found that a small amount of foreign protein added to the culture medium did not modify the rate of proliferation of fibroblasts. A large amount of foreign protein markedly decreased the rate of growth of fibroblasts previously cultivated in homogenic medium but did not affect the rate of proliferation of fibroblasts cultivated previously in the presence of a small amount of the foreign protein. Fibroblasts in vitro respond to the presence of an antigen in the culture medium by becoming immunized against its action.

H. M. FEINBLATT.

- LORD, F. T., AND NYE, R. N.: **Studies on the Pneumococcus. IV. Effect of Bile at Varying Hydrogen Ion Concentrations on Dissolution of Pneumococci.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 703.

Comparative tests with bile and standard pH solutions show that pneumococci undergo more rapid dissolution in bile. The dissolution in bile may be complete within an hour and only partial in standard solutions within this interval. Dissolution of pneumococci occurs most rapidly in the more alkaline end of the bile scale, and with the lapse of time is progressive toward the more acid end, becoming complete within twenty-four hours at a pH of about 6.0 to 7.8 inclusive. Dissolution of pneumococci takes place in human as well as beef bile and at the same range of pH.

H. M. FEINBLATT.

- LORD, F. T., AND NYE, R. N.: **Studies on Pneumococcus. II. Dissolution of Pneumococci at Varying Hydrogen Ion Concentrations. Effect of Temperature, Previous Killing of the Organisms, and Fresh Serum on the Phenomenon. Behavior of Other Organisms.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 689.

When suspended in standard solutions of known hydrogen ion concentration, living washed pneumococci, after incubation, have been observed to dissolve. Within the range of pH 5.0 to 6.0, the suspension clears from disintegration of the organisms within an hour. This phenomenon occurred with all of the strains examined, including Types I, II, and III. A similar dissolution took place in isotonic broth in those solutions having a higher pH than 5.0. Dissolution is most marked between pH 5.0 and 7.0. Some dissolution also takes place toward the alkaline end of the scale, but none occurs at the most acid end. Dissolution takes place at room and ice box temperature, though much more slowly than at incubator temperature. Pneumococci killed by heat for one hour undergo less dissolution than living organisms; those killed by heat at 100° C. for five minutes do not undergo dissolution. The addition of fresh human serum prevents dissolution. Tests with *Streptococcus viri-*



*dens* and *hemolyticus* and *Staphylococcus aureus*, similarly performed with washed suspensions of living organisms in standard solutions at incubator temperature, showed no dissolution. It is believed that the dissolution of the pneumococci under these experimental conditions is due to an enzyme derived from the bacteria themselves.

H. M. FEINBLATT.

D'AUNOY, R.: **Antibody Production after Intratracheal Injection of Antigen.** *Journal of Infectious Diseases*, April, 1922, xxx, No. 4. p. 347.

During this study the attempt was made to record the comparative antibody production achieved in guinea-pigs and rabbits by the injection of various antigens by diverse routes. Thus agglutinin production after intraperitoneal, intravenous, and intratracheal injections of *B. typhosus* and *B. dysenteriae* (Flexner) was studied; production of precipitins for horse and human serums, of lysins for sheep and human red blood cells, and of bacteriolysins and bactericidins for *Vibrio cholerae* were similarly investigated. The conclusions drawn are: Antibodies are produced in animals by the intratracheal inoculation of various antigens. Agglutinins for *B. typhosus* and *B. dysenteriae* are as readily produced by this method as by the intravenous method. Precipitins can be demonstrated in as high titer in animals injected intratracheally with human and horse serums as when such injections are made intravenously. Lysins for human and sheep erythrocytes are produced by intratracheal injections, but such production requires a greater length of time before being evidenced than following the intravenous injections of similar quantities of antigens. Bacteriolysins for *Vibrio cholera* are elaborated earlier and in larger quantities following intratracheal injections than following intraperitoneal injections. No fatal results followed attempts at producing antibodies by intratracheal methods. The further study of this apparently safe and efficient method of antibody production is suggested especially with virulent organisms for which the ordinary laboratory animals are highly susceptible as antigens.

M. M. BANOWITCH.

HUDSON, N. P.: **Inoculation of White Mice with Pfeiffer's Bacillus.**

**IX.** *Journal of Infectious Diseases*, April, 1922, xxx, No. 4, p. 433.

The experiments reported were undertaken to throw some light not only on the pathogenicity of Pfeiffer's bacillus for white mice, but also to relate the pathogenicity to the source of the strain. Other questions investigated were the invasiveness of the bacillus in pure and mixed culture, the possibility of increase in virulence by passage through white mice, and the presence of immunity in those mice that have recovered from a sublethal dose.

Pfeiffer's bacillus when injected intraperitoneally in pure culture was found to be pathogenic for white mice irrespective of the source, and was readily recovered from the heart blood by cultivation on chocolate-agar medium. Strains isolated during influenza epidemics at military camps were more pathogenic for white mice than strains from other sources. The invasiveness of both Pfeiffer's bacillus and *Streptococcus viridans* seemed to have been increased by injections in mixed cultures; the bacillus by injection with pneumococcus, and the coccus by injection with Pfeiffer's bacillus. Pfeiffer's bacillus was not found to be appreciably increased in virulence by passage three or four times through white mice. Sublethal doses of Pfeiffer's bacillus conferred immunity to white mice against lethal and twice lethal doses of heterologous as well as homologous strains. This immunity lasted at least eight weeks.

M. M. BANOWITCH.

JACKSON, D. E., FRIEDLANDER, A., AND LAWRENCE, J. V.: **An Experimental Investigation of the Pharmacological Action of Quinidin.**  
*The Journal of Laboratory and Clinical Medicine*, March, 1922, vii, No. 6, p. 311.

The recently discovered action of quinidin on auricular fibrillation and its promise of extensive clinical utilization is a therapeutic finding of the first importance. Its miraculous effects in some cases and its apparently fatal action in a certain number of cases renders a thorough, comprehensive and accurate study of its action in the body exceedingly valuable. Notwithstanding all precautions it seems that a few unfortunate, and even fatal results, have been brought



about, in a few instances after a normal sinus rhythm had been established, and the patient had appeared to be making entirely satisfactory progress.

The authors experimented with quinidin in connection with other drugs, thinking by so doing a greater understanding of quinidin could be obtained. Dogs were used as the experimental animals.

It was found that quinidin injected intravenously alone, caused an acceleration of the auricular rate and a lowering of the blood-pressure. The ventricular rate also showed stimulation.

Aconitine produces a peculiarity weakening and irregularity of the auricle. Quinidin, after the irregular effect produced by the aconitine, will cause a prompt increase in the amplitude and a regularity of the auricle. The ventricular changes were less marked. It is to be noted, however, that after a time the effects of the quinidin tend to wear off and the aconite action reappears even though no further injections of the drug are made after the quinidin is given. This temporary character of the quinidin action is perhaps similar to that observed over periods of a few hours, or a few days in clinical cases in which fibrillation of the auricles is checked temporarily, but in which a recurrence of the fibrillation soon occurs. Quinidin also fails to act in late stages of aconitine poisoning. This point is of some clinical interest because of the failure of quinidin to stop auricular fibrillation in a certain number of cases. These cases cannot now be known beforehand because there are no known signs or symptoms to serve as a basis for selection. But the fact that quinidin will stop auricular fibrillation in about 50 per cent of all clinical cases, while in the remaining 50 per cent some cases can be changed from a fibrillation to a flutter, others show no change, while in others an acceleration of the beat may apparently occur, indicates that there are probably at least two types of auricular fibrillation.

Barium chlorid causes a marked irregularity in the heart, presumably of purely muscular origin. An injection of 25 mg. of quinidin produces a distinct regularity, but in the later stages of barium irregularity, quinidin is of no value.

Irregularity was caused by damage to the bundle of His, by injecting a mixture of alcohol and chloroform into the base of the ventricle at the position of the auriculoventricular junction. In these cases quinidin exerted a distinct regulatory effect on the heart beat:

and this effect seems to be more lasting than that which usually follows irregularities produced by aconite, digitoxin or barium.

It has been supposed that quinidin paralyzes the inhibitory endings of the vagi in the heart. The authors conclude from their experiments that not only are the vagus endings not paralyzed by quinidin, but that the inhibitory action of the vagi on the heart is, if anything, actually increased by quinidin. They suspect that this action is of immediate importance in the matter of the checking of auricular fibrillation or flutter by quinidin.

Large doses of quinidin depress the vascular sympathetic nerve endings. Such an action probably also occurs in the case of the sympathetic nerves to the heart. And this may be of considerable importance in lessening the irritability of fibrillating or fluttering auricles in clinical cases. The action on the sympathetics is best seen in the blood-pressure. For after large or repeated doses of quinidin, adrenaline may be found to be very much less effective in producing a rise in pressure than it had been before the quinidin had been administered.

With the fall of the general systemic blood-pressure there is a peripheral dilatation, but whether this is due to central or peripheral effect, is not, as yet, known, but certain other features of the drug's action lead the authors to presume that quinidin acts primarily on the peripheral vessels, and possibly to a considerable extent on the capillaries. Small doses of quinidin tend to produce a rise in the pulmonary pressure, while large doses always produce a fall, and in many cases this fall is out of proportion to that which is correspondingly produced in the systemic pressure.

Recently Lewis and his coworkers have introduced the view that in auricular fibrillation a single contraction wave only exists, and that this is propagated and revolves perpetually upon a re-entrant path. The movement is repeated on the average 450 times a minute, and it is this circulating wave which, in its revolution, alone controls the beating of the auricle. "The wave as thus conceived would be influenced by three factors": (a) the length of the path followed; (b) the duration of the refractory period at any given point; and (c) the speed at which the wave is conducted. Lewis has suggested that quinidin may act on auricular fibrillation by either slowing the rate of conduction of the contraction wave (thus tending to increase the length of the gap between the advancing crest of the wave and the re-



treating of refractory tissue over which the wave has just passed and into which the contraction wave is progressively reentering), or else by lengthening out the extent of the refractory period in tissue over which the wave has just passed. The first of these actions would tend to prolong the gap between the refractory tissue and the advancing crest of the returning wave and thus favor continuation of the fibrillation. The second action, by prolonging the refractory period in tissue which has just relaxed would tend to stop the fibrillation because the gap between the refractory tissue and the oncoming crest of the wave would be shortened, and if this shortening would be great enough, the crest would meet refractory tissue and the circulating wave would thus be stopped. Presumably the auricle would then be in a position to take up the normal beat. Lewis suggests that these two opposing actions may neutralize each other so far as beneficial action of the heart is concerned, or the slowing of the conduction may even make the condition worse. He also states that experiments have shown that quinidin in doses comparable to those used clinically may lengthen the refractory period by as much as 50 per cent or more.

The authors think that this hypothesis is inadequate to explain the whole of the action of quinidin. The drug undoubtedly acts on both auricles and ventricles. It tends to counteract the development of fibrillation of the ventricle after such drugs as aconitine or digitoxin. And one of the earliest actions on the normal heart is the slight dilatation of the ventricle. The authors think that in due time it will be found that quinidin acts on the musculature of the peripheral vessels, and perhaps even on the skeletal muscles, in a manner quite similar to that in which it acts on the heart muscle. And the decrease in the power of adrenaline, when used after quinidin, may indicate an action on the sympathetic innervation.

C. M. ANDERSON.

HODGE, W. R., AND COHEN, C.: **Streptococci in Chronic Respiratory Infections.** *Journal of Infectious Diseases*, April, 1922, xxx, No. 4, p. 400.

The chief aim of the study was to determine the constancy and inconstancy of types of streptococci occurring in chronic nontuber-

culous respiratory infections. The streptococcal flora in various samples of sputum from the same patient is, in patients with bronchial asthma, fairly constant and quite complex, from eight to fourteen types of streptococci occurring in single specimens. The streptococcal flora in various particles from the same sample of sputum does not vary. The simple method of using 24-hour serum broth culture of a washed particle of sputum as a basis for vaccine preparation seems as efficient as any, the streptococcal flora in such a culture being approximately parallel to that in the sputum itself. There is, in general, a close parallelism between the grouping of streptococci arrived at through biochemical (fermentation) and serologic (agglutination) reactions. Certain members (*a'* 2.1) of Brown's suggested alpha prime group of streptococci are of special interest; these *a'* 2.1 strains are universally agglutinated by all of the 7 antistreptococcal serums, but produce agglutinins active against their own type of strain only. Absorption experiments indicate that this organism contains a fundamental unit which occurs in each one of the more complicated streptococci used for immunization in one series.

M. M. BANOWITCH.

WOOD, E. J.: **A Further Study of the Quantitative Variations in the Vibration Sensation.** *American Journal of Medical Sciences*, January, 1922, clxiii, No. 1, No. 598, p. 19.

Observations were made with standard instruments on various bony parts of the body in such a way that graphic records could be made and timed in seconds; there were 100 neurological and non-neurological patients. In tabes dorsalis, late in the disease, there is an entire loss of vibration appreciation in the lower half of the body; and, on the other hand, early in tabes before other signs appear it will be found that there is a definite quantitative diminution of time during which these vibrations of standard amplitude are felt. In 80 cases of tabes studied there was a decided "sacral dip" in the graphic record. In multiple neuritis there was a decided reduction in vibration time, but sacral dip was never seen; on the other hand there was a relatively high sacral vibration point. In diabetes improvement in sensation came hand in hand in those receiving proper dietetic treatment.

A. T. MAYS.



PETERSON, W. F., AND SAEELHOFF, C. C.: **Enzyme Mobilization by Means of Roentgen Ray Stimulation.** *American Journal of Medical Sciences*, January, 1922, Lxiii, No. 1, No. 598, p. 101.

By means of selective organ stimulation by roentgen rays in moderate dosage it seems possible to influence the serum enzymes to a considerable degree. Such doses act in stimulating a mobilization of various enzymes; large doses lessen the titer of the serum enzymes. Raying the hepatic area in dogs resulted in a temporary leukocytosis (with eosinophilia) as well as a well-defined increase in the titer of protease, peptidase, lipase and diastase in the serum. A more persistent leukocytosis and a marked mobilization of peptidase resulted from raying the intestinal area. By raying the splenic area a diminution of the serum enzymes, with the exception of lipase, was brought about. Alteration in the coagulation time of the blood followed exposure of all regions. The anti ferment was usually increased after periods of raying but there were no alterations of the complement titer observed.

A. T. MAYS.

SWIFT, H. F., BOOTS, R. H., AND MILLER, C. P.: **A Cutaneous Nematode Infection in Monkeys.** *Journal of Experimental Medicine*, May, 1922, xxxv, No. 5, p. 599.

Experimental attempts to reproduce acute rheumatic fever in monkeys (*Macacus rhesus*) unexpectedly revealed a hitherto undescribed infection to which these animals are subject. A nematode, designated the *Trichosoma cutaneum*, 1922, was found to give rise to several types of skin lesions, subcutaneous nodules, edema about the joints, and elongated serpiginous blisters of the palms and soles. Larval forms of the nematode and possibly adult male worms were found in the subcutaneous nodules.

The temperature of the monkeys varied from 101.5-103.5 degrees F., with an average afternoon temperature of about 1 degree F. higher than that of the morning. The leukocytes varied from 13,000 to 30,000 cu. mm. Eosinophilia, 7 to 30 per cent, was present in all monkeys examined. The appearance of the nodules was for two or three days preceded by a circular area of subcutaneous edema from

4 to 10 mm. in diameter. The nodules were distributed over the dorsal aspect of the hands and feet, over the muscles of the arm, forearm, and thigh, and less frequently over the leg. The skin of the palms and soles showed burrows in the epidermis and small oval vesicles gradually evolving into serpiginous blisters filled with a blood-tinged serous fluid.

The reaction about the worms consisted of proliferation of fixed cells and invasion of eosinophiles, with subsequent presence of giant cells, young blood vessels, and finally capsule formation. Eventually the worms were killed, eliminated, and the nodule disappeared. The worm laid her eggs in the blisters; by the bursting of the blisters the ova were discharged into the outer world.

The nematode has a body 22 to 24 mm. long. The head measures 42 microns in length and 52 microns in width. The ova are lemon-shaped. Neither the worms nor the eggs were obtained from the stools. It is believed that this is the first description of a nematode that lays its eggs in the epidermis.

H. M. FEINBLATT.

GIBSON, R. B., MARTIN, F. T., AND BUELL, M. VAN R.: **A Metabolic Study of Progressive Pseudohypertrophic Muscular Dystrophy and Other Muscular Atrophies.** *Archives of Internal Medicine*, January, 1922, xxix, No. 1, p. 82.

Nine cases of progressive pseudohypertrophic muscular dystrophy are reported. Two cases were young boys in which atrophy was moderately advanced. Three cases in older boys in which muscular atrophy had progressed until movements were practically limited to the muscles of the thorax, distal upper extremities, neck and face. Two cases were adult males. One case of myasthenia gravis, one of muscular atrophy following acute anterior poliomyelitis, and one of myositis ossificans are also included.

From the literature and the observations of the authors the outstanding features of progressive pseudohypertrophic muscular dystrophy are:

(1) Those associated with the atrophic condition of the muscles, and which are intensified as the atrophy progresses:



- (a) Lowered creatinin excretion and creatinin coefficient.
- (b) Creatinuria.
- (c) Recovery in the urine of ingested creatin.
- (d) Creatinemia, though high blood creatins are not a constant finding.

(2) Disturbance of carbohydrate metabolism of endocrine origin, usual but not constant findings.

(a) Hypoglycemia.

(b) Deficient glycogenesis following moderate glucose ingestion, and commonly without glycosuria.

The differential diagnosis of progressive pseudohypertrophic muscular dystrophy, myasthenia gravis, and progressive muscular atrophy may be checked according to McCrudden's suggestion by the metabolic and blood findings. The characteristic differences to be expected with the addition of the glucose tolerance, are summarized as follows:

	<i>Creatinuria</i>	<i>Blood Glucose</i>	<i>Glucose Tolerance</i>
Progressive pseudohypertrophic . . .	Present	Low	Diminished
muscular atrophy			
Myasthenia gravis . . . . .	Absent	Low or normal	Diminished
Progressive muscular atrophy . . . .	Present	Normal	Normal

R. H. BENNETT.

## SECTION ON PEDIATRICS

PATON, D. N.: **Rickets: A Theory of the Metabolic Disturbances and of Its Associations With Tetany.** *British Medical Journal*, March 11, 1922, No. 3193, p. 379.

Recent work is pointing more to the primary involvement of phosphorus rather than calcium in the perverted metabolism of rickets. The evidence tends to indicate that failure in the supply of phosphoric acid, or its supply in unsuitable forms, may be the limiting factor in the ossification of rickets, and this suggests a possible disturbance in the metabolism which may explain not only the bone changes in rickets, but also its association with tetany. The phosphorus of the blood is carried in three definitely distinct compounds: (1) phospholipin, (2) inorganic phosphorus, (3) nucleic acid. Lecithin is probably the most abundant phospholipin in the body, but little is known about its metabolism. There is satisfactory evidence that it can be formed by the combination of fats, cholin and inorganic phosphates. In the chick and in the salmon the phosphates for the bones come from the lecithin of the yolk of the egg, and the constant large amount of lecithin found in the liver during starvation suggests that it is in this combination that the phosphorus of wasting tissues is fixed for further use in the body. The close connection of the phospholipins with bone formation seems to be indicated by the presence of lecithin before calcification in such pathological changes as therooma, and by the higher proportion of lecithin in the bone marrow of the young than in the old animals. The possibility is suggested that some modification in the normal metabolism of lecithin may be the essential disturbance in rickets—a disturbance leading to the transference of phosphoric acid to bone in an unsuitable form and to a concomitant change in the metabolism of cholin. The formation of an excess of methyl guanidin from cholin, liberated



in the metabolism of lecithin would account for the frequent association of tetany in rickets, and it has been shown that methyl guanidin produces the same symptoms as those of tetania parathyreopriva. The theory is put forward with the hope that it may indicate lines for further work upon the nature of the disturbance in rickets.

L. C. JOHNSON.

HILL, L., AND CAMPBELL, J. A.: **Metabolism of Children Undergoing Open-Air Treatment, Heliotherapy and Balneotherapy.** *British Medical Journal*, February 25, 1922, No. 3191, p. 301.

Observations on metabolism of children crippled with surgical tuberculosis and lying fixed in splints in bed, more or less nude, are described. The metabolism on the average was increased 40 per cent above the standard for the same weight of children confined in a closed calorimeter. After three months' treatment, including graduated exposure to open air and heliotherapy, their metabolism out of doors was 20 per cent above that in well ventilated cubicles soon after admission. Those who pigmented well in the sun gave about the same figures as those who did not pigment well, but the former gave better figures for weight. The rise in metabolism caused by heliotherapy, per se, is insignificant as compared to that caused by exposure to open air, but the value of heliotherapy as a factor towards arrest of the disease is not disputed. Balneotherapy increases the rate of metabolism much above the resting level. The bodily tone and general condition of the children under the specially graduated treatment is remarkable when the long period of immobilization in splints in bed is considered, and the treatment might be applied with advantage in other cases involving long confinement in bed.

L. C. JOHNSON.

BROWNE, F. J.: **Pneumonia Neonatorum.** *British Medical Record*, March 25, 1922, No. 3195, p. 469.

Pneumonia is a common cause of death after birth, being responsible for 21 out of 80 deaths in the first week of life. It may be due to antenatal infection from premature rupture of the membranes,

and the infant may be suffering from an advanced stage of pneumonia before its birth. There is little defensive reaction as compared with the adult, and in the first few days of life pneumonia is an insidious disease, presenting no characteristic symptoms which would lead to its detection. Even postmortem it may be missed unless microscopic examination of the lungs be carried out. Acute hemorrhagic pneumonia of infants forms a distinct clinical and pathological entity which gives rise to sudden death in children who may be apparently previously healthy, and either full time or premature. It follows acute congestion in the lungs, the fragile vessels in the alveolar walls rupturing, and flooding the alveoli and bronchi with blood. The sudden death is preceded by epistaxis, and blanching of the skin, and the etiological factor may be organismal, or possibly, of the nature of an immediate anaphylactic reaction. It is probable that atelectasis is a predisposing factor in the causing of the pneumonia. The premature infants were more prone to pneumonia than were full term infants, illustrating their increased liability to infection. In none of the cases was pneumonia suspected before death. The importance of avoiding premature rupture of the membranes during labor, and of taking every precaution to safeguard the newly born infant against infection, cannot be over emphasized.

L. C. JOHNSON.

GLENN-RAVDIN, E.: **Some Statistics Concerning Pneumonia with Empyema in Children.** *American Journal of Medical Sciences*, February, 1922, clxiii, No. 2, p. 246.

In the children's ward of the University Hospital, Philadelphia, between 1900 and 1918, there were 611 cases of pneumonia below the age of 13. Bronchopneumonia cases 274; croupous pneumonia 312; non-specified (influenzal and others) 25. A rise in incidence occurred in both types during the second year of life. After the fourth year bronchopneumonia was relatively infrequent. As to prognosis the mortality is highest in those children with one entire lung involved, the right side showing the highest mortality. The right upper lobe is more frequently involved, and the mortality greater while the reverse is true for the bases. Bronchopneumonia is two



and a half times more frequent during the first six months. In the total series the mortality was 39.4 per cent for bronchopneumonia and 18.3 per cent for the croupous type. The percentage of empyemata complicating bronchopneumonia is lower, but the mortality in this type is higher. Thirty-nine cases developed empyema, 1.8 per cent following bronchopneumonia, 7.5 per cent following croupous pneumonia.

A. T. MAYS.

RICH. C. O'N.: **Fat Embolism.** *Nebraska State Medical Journal*, 1922, vii, 14.

*Case.*—Boy, 19 years; fracture of left humerus, surgical neck of right humerus and middle third of left femur; temperature 101° F., pulse 124; respiration 33; fully conscious; following day temperature 103° F., pulse 136; respiration 28 and irregular; pulse full and bounding; stuporous, restless, and pain. Urine positive for fat. Blood 90 per cent hemoglobin; red blood count 5,000,000; leukocytes 12,500; polymorphonuclears 84 per cent; lymphocytes 18 per cent. Following day fever was higher, cyanotic, poor pulse, and weaker. Urine showed a visible amount of fat, fully a half rising to upper part of test tube, three-fourth full of urine. Died the following day. Autopsy was refused. "Based on symptoms, physical findings and marked lipuria, diagnosis of pulmonary fat embolism was made".

This condition was first mentioned in 1669. In 1827, Magendie injected olive oil into veins of dogs and discovered that liquid fat would not pass through the smaller vessels, producing a mechanical block, which he attributed to increased viscosity of the blood. He described the symptoms, portraying the pathological changes in the lungs and noted presence of oil in blood-vessels and alveoli of the lungs.

"Fat is demonstrable in the urine for 2 or 3 days following most fractures of long bones, but is not the case in short bones". Symptoms do not result in all cases; the formation depends upon the amount and distribution of the fat. With a large amount in the circulation, the more likely are important regions to become overwhelmed.

The symptoms are similar to those of shock. Two theories as to cause have been advanced to prove that fat embolism may be the cause of shock; Porter (*Boston Med. & Surg. Jour.*, 1917, p. 176)

says fat injected intravenously or gaining access to the venous circulation after fractures or lacerations of the subcutaneous tissues, passes through the pulmonary vessels, but lodges in the peripheral systemic vessels and thereby produces circulatory failure by some mechanism, not yet fully explained.

Whartin distinguishes two types of fat embolism, clinically, namely pulmonary and cerebral. He states the symptoms of the pulmonary are less characteristic and more difficult of diagnosis. "Symptoms are dyspnea, cough, hemorrhage, cyanosis and symptoms of pulmonary edema. In the so-called apoplectiform cases, these symptoms may develop immediately after the injury or may be delayed. Diagnosis is extremely difficult and frequently is not made until the autopsy findings reveal it. There may be an initial free interval before the respiratory symptoms appear; restlessness, headache and stupor may be the first symptoms or a respiratory difficulty may suddenly develop and the patient suffer from air hunger. Heart beats are more frequent, irregular, and tension low. Precordial or epigastric pain may be felt. Right heart may be dilated. More frequently the temperature is low at first and rises gradually after a few hours. Respiratory rhythm may be irregular. Resonance is slightly diminished and becomes somewhat tympanic in character. Moist râles are heard over the base. Free fat can be demonstrated in the urine".

The symptoms may resemble those of shock; in fact differentiation at times is impossible clinically. In the cerebral form there is great restlessness, muscular twitching, convulsion and finally paralysis. Nearly all cases show marked dyspnea. Some cases recover spontaneously. Others are considered to be in a condition of delirium tremens or to be suffering from an embolus of septic type.

"Dennis' rule for fat embolism, as a means of differentiation is, shock 3 hours, fat embolism 3 days, and pulmonary embolism, 3 weeks."

SHERMAN, DEW. H., AND LOHNES, H. R.: **A Practical Consideration of the Intestinal Flora in Infants.** *Archives of Pediatrics*, 1922, xxxix, 37.

Fats play an important part in the determination of the types and the multiplication of the flora. They are said never to initiate



fermentation or putrefaction, but they may increase either. Acids are the end-products of carbohydrate media. Alkalinity is caused by proteids. By protein digestion the types causing alkalinity may produce proteid end-products. They may be toxic, and will cause constitutional symptoms if absorbed. Either, the alkali and the acid producing bacteria, will influence the intestinal function. The intestinal canal is a perfect incubator.

Some strains of colon bacilli have been identified which have lost their power to ferment sugars. If this strain is grown upon sugar media it will regain its lost function, and become an intense sugar fermentative. Kendall says the bacterial flora of the intestine must be considered as a whole rather than as a heterogeneous collection.

In the nursing infants digestive tract there are always present sugar, or its end-products, as the food contains a relatively high percentage of milk sugar, and a relatively low percentage of easily digested proteids. The ideal flora of the nursing infant consists of aciduric constituents, and is dominated by *Bacillus bifidus*. The latter is predominant only in the breast fed. It is a protecting flora. The flora in the artificially fed infant resembles more closely that of the adult. In the upper part of the bowel with its more constant sugar contents, we find an aciduric flora, dominated by *Bacillus acidophilus*, in the lower ileum or colon, where the sugar contents varies, the colon group is found which will adapt itself to either the carbohydrate or proteid media.

The laboratory tests reveal three types of flora, the fermentative, the proteolytic and the normal or facultative flora. The first will readily digest the flora grown upon carbohydrate media and will form acids, while grown upon proteid media it will not produce digestion or proteolysis. It is characteristically aciduric. Aciduric does not imply excessive acidity, the fermentative does imply excessive acidity. In the breast fed infant it is ideally aciduric, while in the artificially fed it is mildly proteolytic. The ideal flora for the artificially fed infant would be an aciduric flora dominated by the *Bacillus acidophilus*. The proteolytic flora will produce rapid digestion upon proteid media, but only a slight change on carbohydrate media. This type of bacterial metabolism is strongly putrefactive.

The normal facultative flora are not excessively proteolytic or fermentative. The *Bacillus coli* is an example. It is both fermentative and putrefactive, depending upon the medium.

The so-called carbohydrate fermentation is characterized by sour smelling, loose, acid stools, which excoriate and redden the buttocks. It is most commonly observed with the normal flora implanted upon an abundance of sugar. This provides a fertile soil for excessive acidity.

Crystallizable sugars, such as cane, milk, malt, sugar and glucose act as cathartics through irritation and osmosis. They are hurried into the colon, and there the flora act progressively fermentative. The sugars then form acids. These acids further peristalsis. The result is a sour loose stool. A simple carbohydrate starvation will not always relieve the condition. Sometimes the change in the sugar will cause a change in the type of stool. Dyspepsia with fermentation may result where the intake of sugar is not excessive, but where it is too rapidly thrown into the colon, for fermentation.

Dextrine and lactose increase the *bacillus bifidus* and the *bacillus acidophilus*. With their development the *bacillus Welchii* is apt to develop.

On a carbohydrate diet the intestinal flora are fermentative and occupy almost all the levels of the intestinal canal, but with a mixed diet the flora differs at various levels. If given a proper aciduric state, *bacillus Welchii* and the proteolytic flora will diminish. There will likewise be a decrease of gas-producing, supposedly dominated by the streptococcus.

Test tubes show that proteid digestive end-products cause intoxication. A toxic albumose has been identified as a cause of intoxication in bowel obstruction. Vasomotor depressants have been identified as one of the end-products of imperfect proteid digestion. This is an explanation of the vasomotor symptoms occurring in protein intoxication.

In implanting foreign bacterial strains into the intestine results can be expected only from changing the character of the food to one upon which the intestinal bacteria grow. An increase of the carbohydrates is necessary to encourage the colon fermentation. Dextrin is the type of food which has been found to convert the proteolytic to an aciduric flora most readily. Maltose, saccharose and dextrose have only a moderate ability, while most starches have a very feeble effect. Wheat bread, because of the dextrin contents develops the *bacillus acidophilus* to 90 or 95 per cent of the flora of the intestinal tract, and will crowd out all other bacteria except the streptococcus.



Carbohydrates can be used with rice without increasing bacillus acidophilus. Rice does not inhibit the development of the proteolytic flora as does wheat. Meat readily establishes a proteolytic flora; casein and fish establish it with greater difficulty, vegetable proteids have little or no effect. Because proteolysis or putrefactive processes are most marked in the ileum this explains why the carbohydrates are required to produce a combating flora, and also why the colon washes are of no avail to influence a process too high up to be reached.

Porter classifies the proteolytic flora and its results in the mild, the fulminating, the grave chronic, and the putrid diarrhea of infants. The first corresponds to Czerny's "milk injury"; Finkelstein calls it "disturbance of balance". These cases are benefited by an addition of dextrin to the food, as malt soup or dextrinized starch. The grave more or less chronic type occurs in older children, from one to two months old. The stools are frequent, the loss of weight is progressive, and there is an intensely proteolytic digestion.

In the infectious diarrheas the flora is usually proteolytic, at the onset. If a strict proteid diet is adhered to the stools become foul smelling, and indicates that proteid intoxication has set in. The author is of the opinion that carbohydrate diet is indicated in these cases.

**DENZER, B. S.:** The Diagnosis of Peritonitis and Peritoneal Transudates in Infants by Means of Abdominal Puncture with the Capillary Tube. *American Journal of Medical Sciences*, February, 1922, clxiii, No. 2, p. 237.

Five cases are presented in which abdominal puncture and the capillary tube were of service in establishing the diagnosis. Free fluid was found by the same method in the peritoneal cavity of cases of rickets and marasmus. This method aids in diagnosis where only small amounts of fluid can aid in practical and experimental interest, such as in the response of the peritoneum to infections, irritants, and sera in pneumococcic infections.

A. T. MAYR.

SECTION ON  
ROENTGENOLOGY AND ELECTRO-  
THERAPEUTICS

KLEWITZ, F.: **Roentgen Ray Treatment of Bronchial Asthma** (Roentgenbestrahlung bei Asthma bronchiale). *Munchener Medizinische Wochenschrift*, March, 3, 1922, No. 9, p. 305.

The author reports 24 cases treated by deep therapy. Of these 5 were completely cured, 9 cases had relapses; 3 were improved with fewer and less severe paroxysms; 7 were unimproved. The author thinks that the ray has some influence in prevention of secretion of mucus by the bronchial mucosa. The autonomic nervous system may also be influenced. The blood studies did not reveal any diminution in the number of eosinophiles, on the contrary in some of the cases there was an increase.

H. JOACHIM.

PETERSON, W. F., AND SAELHOF, C. C.: **Roentgen Ray Stimulation of the Pancreas in Experimental Pancreatic Deficiency.** *American Journal of Medical Sciences*, March, 1922, clxiii, No. 3, p. 391.

Investigating the possible effect which roentgen-ray stimulation of the pancreas might have on the carbohydrate tolerance of partially depancreatized dogs it was first noted that a transient increase in sugar output occurred, followed by an increase in carbohydrate tolerance. The increased tolerance is not due to the preliminary increase in sugar elimination. When increased sugar elimination results from some other irritant (turpentine abscesses) no increase in carbohydrate tolerance is later noted. There is a temporary increase in blood sugar followed by a lowering which occurs from five hours to several days after the irradiation. Acidosis will diminish or even disappear after irradiation together with improvement in the sugar tolerance.



Irradiation causes a direct stimulation of cellular metabolic processes. Too large doses, causing injury to the pancreatic function, cause a diminution in carbohydrate tolerance. The titer of the serum diastases, which may be altered by irradiation of the liver, seems to be without influence on the tolerance. Irradiation of tissues, other than those containing the pancreatic rest, no effect is observed on the carbohydrate tolerance, other than the primary augmentation of sugar excretion.

A. T. MAYS.

HIRSCH, I. S., AND SHAPIRO, L. L.: **The Morphology of the Heart in Relation to Habitus and a New Method of Estimating Morphological Changes. A Roentgen Study.** *American Journal of Medical Sciences*, December, 1921, clxii, No. 597, No. 6, p. 892.

Mills classification of the four major types of physique has been adopted and in use for several years. These are the hypersthenic, the sthenic, the hyposthenic, and the asthenic. The asthenic habitus is the long, narrow, shallow thorax, with a very acute subcostal angle, flat diaphragm at the level of the 11th rib and a short abdomen. There is five times as much upward displacement during expiration as there is downward displacement during inspiration, and the heart is vertical in this type, the angle of the heart axis being forty-eight degrees, and the heart approaches a circular form with the cardiovascular angle obliterated. The right auricle and left ventricle curves show little convexity, and the apex points downward and is sharp. The hyposthenic thorax is broader and moderately long, with a subcostal angle of forty degrees. The diaphragm domes slope downward, and are at the tenth rib level. The relation of downward inspiratory to upward expiratory movement is 1:3. The heart lies markedly oblique in this type, the axis being about forty-three degrees. The shape of the heart shows a tendency to circular form. The sthenic habitus has a shorter and wider thorax with a subcostal angle of ninety degrees. The diaphragm is convex at the 9th rib level. The heart lies somewhat oblique, the axis being thirty-seven degrees (the angle formed by intersection of transverse and of long diameters). The shape of the heart in this type is triangular, the cardiovascular angle is one hundred fifty degrees with curves of

the right auricle and left ventricle moderately convex. In the hypersthenic habitus the thorax is short with a very obtuse subcostal angle. The diaphragmatic domes are high and convex at the level of the 8th rib. The heart lies transversely with an axis of thirty-three degrees, with a broad shape, relatively short vertically and generally oval. The cardiovascular angle is obtuse, one hundred thirty-five degrees. The apex is broad and points outward, with considerable convexity of the left ventricle. The age, sex, and height are relatively unimportant factors in the estimation of the heart size, the weight permits a more conservative average classification because the weight is a characteristic of habitus. The clinician when mapping out the heart in relation to the mid-clavicular line, in reference to the interspaces, is correct, for he is determining the relationship of the heart to the habitus.

A. T. MAYS.

McQUARRIE, I., AND WHIPPLE, G. H.: **A Study of Renal Function in Roentgen Ray Intoxication. Resistance of Renal Epithelium to Direct Radiation.** *The Journal of Experimental Medicine*, February, 1922, xxxv, No. 2, p. 225.

Normal dogs were placed under observation for several days, during which time the kidney function tests to be used in the subsequent experiments were performed upon them. The animals were then exposed to a carefully measured dose of x-rays, following which the renal function was measured daily for a week or more. In some cases sublethal doses were given; in others, huge and frequently fatal exposures. The renal function tests employed were the phenol-sulfonephthalein test and a method of examination to determine the capacity of the kidneys to eliminate urea. The animals were autopsied and the kidneys examined histologically.

These experiments proved that moderate doses of x-rays given repeatedly over long periods of time have no demonstrable influence on renal function or structure. Large doses of x-rays given directly over the kidney may cause a slight but definite lowering of renal function, which lasts for a period of a few days, but which does not have any corresponding histological change.

H. M. FEINBLATT.



REYNOLDS, L., AND McCLURE, C. W.: Motor Phenomena Occurring In Normal Stomachs, in the Presence of Peptic Ulcer and Its Pain, as Observed Fluoroscopically. *Archives of Internal Medicine*, January, 1922, xxix, No. 1, p. 1.

This communication embodies the principal results of fluoroscopic observations of the stomachs of normal men and of patients with ulcer of the stomach or duodenum, after the feeding of a meal composed of meat and barium.

Five normal persons were examined. The examinations showed that the stomach empties itself in a regularly progressive manner. Peristaltic waves begin high up in the gastric walls at uniform intervals of about twenty seconds and gradually deepen progress in an orderly manner to the region of the pyloric sphincter. As each wave approaches the sphincter the latter opens allowing the chyme to be ejected into the duodenum over a period of about ten seconds. With the subject in a reclining position, one of the normal stomachs emptied itself in about five hours. Three of the normal stomachs were almost empty in five hours.

Abnormal phenomena observed in the stomachs of patients with duodenal or gastric ulcer were modifications in the motor activities of the stomachs of healthy persons. The abnormalities noted were: (1) an exaggerated type of normal gastric peristalsis; (2) irregularity in the time of occurrence, depth and length of the course of peristaltic waves; (3) partial or complete intermittent spasm of the pyloric sphincter; (4) localized, permanent, stationary spasm of the gastric musculature causing the so-called incisura; (5) gastric anti-peristalsis; (6) delayed emptying of the stomach; and (7) very rapid emptying of the stomach. The onset of pain was accompanied by modifications in whatever type of motor activity the stomach had previously manifested.

R. H. BENNETT.

SECTION ON  
NEUROLOGY AND PSYCHIATRY

LOWENSTEIN, P. S.: **The Relation of the Pituitary Gland to Epilepsy.**  
*American Journal of Medical Sciences*, January, 1922, clxiii, No. 1,  
No. 598, p. 120.

Sixteen cases of all types of epilepsy were studied. The average duration was five and six-tenths years, the extremes being six months and fourteen years. In studying the potency of various commercial pituitary products the least variable was found to be the posterior lobe of Parke, Davis and Company (pituitrin), and the whole gland extract of Burrough, Wellcome and Company. Five cases (31 per cent) were apparently benefited, but no cases showing the typical epileptic constitution were benefited. No improvement was found in patients with abnormal fundi or visual fields.

A. T. MAYS.

THOMAS, J. E., AND WHEELON, H.: **The Nervous Control of the Pyloric Sphincter.** *Journal of Laboratory and Clinical Medicine*, April, 1922, vii, No. 7, p. 375.

From a review of the literature and confirmatory experimental results it is shown that the influence of the extrinsic nerves on the motility of the pyloric sphincter is the same as their influence on the antrum. It is suggested that this fact is more in keeping with the view that regards these structures as a functional unit than with the idea that the pyloric sphincter is a separate functional entity having a special nerve supply and controlled by a special reflex mechanism.

Experimental evidence is produced showing that the pyloric sphincter receives a double nerve supply consisting of motor and in-



hibitory nerves coursing by way of the vagi and splanchnics, both nerves being mainly motor in function. Inhibitory fibers are to be found in both nerves but more in the splanchnics than the vagi. The innervation of the sphincters is compared and found to correspond to the segmental level from which the associated structures are supplied. Attention is called to the fact that the division of the autonomic nervous system into sympathetics and parasympathetics does not apply en masse to the stomach and pyloric sphincter.

A more or less constant relationship is shown to exist between changes in the blood pressure and changes in the motility of the pyloric sphincter when these are produced by splanchnic stimulation but not when produced by stimulation of the vagi. As a tentative explanation for this phenomenon it is suggested that the action of the inhibitory fibers in the splanchnics may be augmented by the liberation of adrenalin. Vascular changes alone are not considered sufficient to account for the result obtained.

C. M. ANDERSON.

EPSTEIN, S.: **Infectious Arthritis of the Spine.** *American Journal of Medical Sciences*, March, 1922, clxii, No. 3, p. 401.

Arthritis of the lumbar spine traceable to infections is a common cause of low back pain. Heavy muscles cover the spine and render it difficult to palpate. These muscles cause profound changes in symmetry of the entire trunk when their function is directly or indirectly impaired. The nerve trunks are in close proximity and in the pressure of joint disease may have far-reaching effects. A definite list is due to osseous thickening and muscular spasm when evanescent cases of lumbago are excluded. In acute severe cases there is rapid softening of a vertebral lip, contraction or shortening of a meniscus, soon eventuating in a rounded lumbar kyphosis. Destruction of one half of the upper margin of the last lumbar will readily produce lateral deviation of the trunk. A persisting contraction usually means a polyarthritis with hip involvement. The treatment is essentially mechanical in infectious arthritis of the spine. Portals of entry of infection must be investigated. In the author's experience no single case has been cured by the extraction of teeth or bridge removals although much pain and suffering have been relieved by oral

and throat hygiene and removal of pelvic or osteomyelitis foci. A plaster jacket and rest in bed are necessary during the acutely painful stage to prevent extension of the process. Full length jackets extending to the trochanters are most comforting. To prevent deformities the Bradford frame is used. In the acute stage massage is contraindicated, in convalescence it occasionally gives relief. Twistings, pushings, kneadings, and adjustments are manifestly harmful, Spa treatments are contraindicated but the French are in favor of heliotherapy. Light braces are used during convalescence.

A. T. MAYS.

DAVIS, T. K.: **An Endocrinal Factor in General Paresis.** *American Journal of Medical Sciences*, March, 1922, clxiii, No. 3, p. 425.

The endocrinal status of the individual has a discernible influence in determining whether, once infected with syphilis, an individual is likely to develop paresis. Status lymphaticus is rare among male cases of paresis and is seen less frequently among paretics than among autopsied hospital male cases. Only 2 individuals in a group of 82 unselected cases of general paresis, had status lymphaticus. Individuals who have low suprarenal functioning appear to develop paresis less frequently than strong suprarenal individuals. The weak suprarenal type can be held in check by medication in a manner quite impossible with his opposite in type. This would be an adjunct to the usual anti-luetic treatment. The course of general paresis, on the average, varies in rapidity directly with the suprarenal strength of the individual.

A. T. MAYS.

WARNOCK, F.: **The Colloidal Benzoin Reaction of Cerebrospinal Fluid.** *Journal of Laboratory and Clinical Medicine*, April, 1922, vii, No. 7, p. 400.

In summing up the results of the experiments on the use of the colloidal benzoin precipitation reaction for cerebrospinal fluids the following results were obtained: That undoubtedly syphilitic cerebrospinal fluids do not regularly precipitate in any definite zone of



dilution. The benzoïn reaction adds little in doubtful syphilitic cases. Tuberculous meningitic cerebrospinal fluids do not precipitate the colloidal benzoïn in any definite range of dilutions. Many nonsyphilitic cerebrospinal fluids do precipitate the colloidal benzoïn suspension, and even precipitate it in the so-called syphilitic zone. The colloidal benzoïn precipitation reactions repeated on the same fluids do not give uniform results.

The results were based on tests performed on a total of 87 cerebrospinal fluids, 29 of which were diagnosed syphilitic, either clinically or from the laboratory standpoint, and 58 of which were nonsyphilitic. Of the 29 syphilitic spinal fluids 12 precipitated in the syphilitic zone. Each of them continued beyond that range. Of the 58 nonsyphilitic spinal fluids 15 precipitated in the syphilitic zone.

C. M. ANDERSON.

WYNN, J.: Observations Following Intravenous Injections of Hypertonic Salt Solution in Cases of Neurosyphilis. *Archives of Internal Medicine*, January, 1922, xxix, No. 1, p. 72.

It has been shown in cats that the cerebrospinal fluid pressure after intravenous injection of salt solution is reduced to zero or to a negative figure, and an intraspinally injected substance can be shown to be dislocated into the substance of the nervous system. Consequently, in man it would seem reasonable to suppose that the fluid content of the subarachnoid space passes into the brain substance after intravenous injections of salt solution. Such a displacement of injected serum would seem especially to be desired in cases of neurosyphilis with few or no posterior root symptoms.

Therefore, it was decided that certain patients with neurosyphilis receiving intraspinal treatment should receive 200 c. c. of 15 per cent salt solution intravenously during the hour following intraspinal treatment, this to be repeated with each succeeding serum treatment.

Intravenous injections of 200 c. c. of 15 per cent salt solution were given to six patients with neurosyphilis, with resulting disagreeable but not alarming symptoms. In these cases the cerebrospinal fluid pressure was found to rise sharply and then to fall, reaching a point about 100 mm. below the original level by thirty minutes after the end of the salt injection.

Salt injections were given according to a definite routine over a period of months, augmenting intraspinal treatment, in a group with neurosyphilis. There was no serologic or cytologic improvement over the usual course with intraspinal treatment alone, and symptoms were distinctly aggravated. Such injections hence would seem to have no therapeutic value, in this group of neurosyphilis cases.

R. H. BENNETT.

- GRAY, H.: **Latent Neurosyphilis in Eight per cent of Medical Patients Ignored Owing to Neglect of Lumbar Puncture.** *American Journal of Medical Sciences*, March, 1922, clxiii, No. 3, p. 384.

In 62 medical cases, all supposedly non-syphilitic, 8 were found to have the disease. In 5 of the 8 there was involvement of the central nervous system. Relying on the examination and neglecting the history leads to overlooking syphilis. Neurosyphilis should be more generally suspected in an internal medical clinic. A preliminary fundus examination should be made on every syphilitic, followed by a lumbar puncture. If the reaction is positive an annual repetition of the test, after treatment, should be made until the reaction is negative and after that it should be made every two years to prevent recurrence. Watchful waiting in a syphilitic does far more harm than the occasional accidents incident to lumbar puncture. The Sam Browne belt with sling removed was used successfully instead of the knotted sheet.

A. T. MAYS.

- CLARK, L. P.: **Epileptoid or Fainting Attacks in Hypopituitarism.** *American Journal of Medical Sciences*, February, 1922, clxiii, No. 2, p. 211.

There are a number of rapidly growing adolescents who have relatively benign fainting attacks which at first seemingly simulate larval forms of petit mal epilepsy, but do not have the epileptic character and the general physical and mental stigma of the grave disorder. The syncopal states are but a part of the obscure clinical



picture of dyspituitarism in which there is an excess of anterior lobe function. They present an enduring low blood-pressure and diminished sympathetic tone in the autonomic system. The pulse is slow and weak and the individual is under oxygenized. The tissue metabolism is slow, resulting in chronic fatigue, requiring much sleep. The mental development is retarded. Every case improves with continuous out-door living and long hours of sleep, thus restoring the glandular and physical balance, sometimes without glandular therapy.

A. T. MAYS.

**McCLELAND, H.:** A Statistical Study of Seventy-Seven Cases of Tuberculous Meningitis. *Canadian Medical Association Journal*, March, 1922, xii, No. 3, p. 157.

This study embraces the clinical, laboratory and postmortem findings in a series of 77 cases of tuberculous meningitis. Of the 77 cases, 7 were discharged or removed from the hospital and the result is not known.

Of the 70 cases remaining in the hospital, the termination was fatal without exception. The average duration of illness for the 70 known cases was 19.9 days. The age did not seem to have any particular bearing on the length of the illness.

A history of definite contact with another member of the household suffering from tuberculosis was obtained in 27.6 per cent of the series.

*Physical Signs.*—The first physical signs most commonly observed in these cases, and in order of frequency, were: rigidity, disturbed pupillary reaction (ptosis, strabismus, etc.), Kernig's sign, Brudzinski's sign and paralysis. In infants, bulging of the anterior fontanelle, was one of the first physical signs to appear. Choroidal tubercle were not present in these series.

*Blood Findings.*—There was nothing significant in the blood findings. Average leukocyte count was about 15,000 ranging from 4,000 to 28,000. Polymorphonuclears constituted on an average of 65 per cent.

*Cerebrospinal Fluid.*—The cell count ranged from 3 to 1870; the majority of the counts being between 100 and 400 cells. Positive globulin tests (Noguchi) were present in 92 per cent. A film

was present in 90 per cent of the fluids examined, and tubercle bacilli in 68 per cent of the cases.

*Skin Tests.*—Skin tests were positive in 84 per cent of the children patients under five years.

*Complications.*—Complications were present in 40 per cent of the series; these included: pulmonary and miliary tuberculosis, acute and chronic bronchitis, bronchopneumonia, whooping cough, otitis media and pyelitis.

*Pathological Findings.*—Fourteen postmortem examinations were made; the brains were examined in eight of them. The organs showing the presence of tubercle bacilli were as follows:

In the bronchial glands .....	92.8 per cent
In the lungs .....	78.6 per cent
In the spleen .....	71.4 per cent
In the liver .....	57.1 per cent
In the suprarenals .....	50. per cent
In the mesenteric glands .....	35.7 per cent
In the intestines .....	35.7 per cent
In the kidneys .....	35.7 per cent
In the bladder .....	7.1 per cent

No evidence of tuberculosis was found in the heart or pancreas in any case. The 8 brains examined showed tuberculosis, as follows:

About the base .....	100 per cent
On the cortex .....	75 per cent
In choroidal plexus .....	37.5 per cent

Mention of a primary focus is made as follows:

In bronchial glands .....	75. per cent
In mesenteric glands .....	12.5 per cent
In lungs .....	12.5 per cent

S. CHES.

MCCARRISON, R.: **Fats in Relation to the Genesis of Goiter.** *British Medical Journal*, February 4, 1922, No. 3188, p. 178.

In 1920 pigeons were fed largely on butter with grain, and others with butter and onions. The thyroid glands of those fed only on



grain and butter showed in 65 per cent of the cases, microscopic changes in the gland very like those of the thyroid of Graves disease. The thyroids of those having butter and onions did not show these changes, denoting a protective influence on the part of the onions. The fact that not all of the butter and grain fed birds developed goiter, suggest that the butter in itself was not the cause of the goiter, but that it was made a determining cause by the operation of some other factor or factors. Later experiments were done to contrast the action on the thyroid gland, of free oleic acid with that of butter, and cod-liver oil. This series of experiments seemed to indicate that free unsaturated fatty acid (oleic acid) is in certain cases only, peculiarly potent in respect to goiter production, and that cod-liver oil is peculiarly beneficial in preventing goiter. Further experiments were carried out with tadpoles, adding the same fats to their diet and iodine as well in some groups. All of the experiments emphasize the dependence of the animal organism and of the thyroid gland upon an amount of iodine approximately proportionate to the amount of edible fat or of free unsaturated oleic acid. When the available iodine is not sufficient then the animal and the thyroid suffer; when it is rendered sufficient, but not excessive, then metabolism and thyroid function proceed normally. The author proposes as another factor, the abnormal process of digestion which arises from the introduction of bacteria into the digestive tube, and quotes from Plummer: "That introduction of bacteria into the digestive tract is an important factor, if not the primary cause of endemic goiter, is fairly well established."

L. C. JOHNSON.

ANDERS, J. M., AND JAMESON, H. L.: **The Relation of Acromegaly to Thyroid Disease: With a Statistical Study.** *American Journal of Medical Sciences*, February, 1922, clxiii, No. 2, p. 190.

In 33 per cent of the cases of acromegaly studied in the literature there was an associated disturbance of the thyroid function. The authors found that hypothyroidism is more commonly associated with acromegaly than hyperthyroidism, and that those combined cases which manifest myxedematous features are decidedly improved with the use of thyroid preparations. In combined cases the thyroid dis-

turbance arises a number of years after the onset of the dyspituitarism (when the stage of hypopituitarism is reached). The metabolic rate is important in suspicious cases. The approved sugar tolerance test should be made on all cases of acromegaly with a view of determining the state of both the pituitary and the thyroid function. The age incidence and occurrence in females is slightly higher in the combined pituitary and thyroid cases than in the uncombined.

A. T. MAYS.

GRIFFITH, J. P. C.: **Acute Cerebellar Encephalitis (Acute Cerebellar Ataxia).** *American Journal of Medical Sciences*, December, 1921, clxii, No. 6, No. 597, p. 781.

A summary of 31 recorded cases is made. It was found that the onset was acute with unconsciousness and absence of speech, these possibly being preceded by initial vomiting or convulsions. The unconsciousness disappears in a few days, but the mentality is not yet quite normal; that is the returning speech remains affected, in various ways, suggesting difficulty in enunciation rather than in thought. There is a very decided degree of ataxia of the limbs, often nodding movement of the head backwards and other irregular movements of the head and trunk. The patient either cannot walk at all, or has the staggering drunken gait. The immediate cause is variable but 78 per cent appeared to be caused by some infection. In 25 per cent of cases measles immediately preceded; in 17 per cent influenza; in 13 per cent typhoid. The ages ranged between 3 and 12 years, 60 per cent were over 6. The prognosis as to survival is good, but complete recovery is slow, from 4 months to a year. In one-third the recovery was complete.

+ A. T. MAYS.

BROWN, W. L.: **The Position of the Thyroid Gland in the Endocrine System.** *British Medical Journal*, January 21, 1922, No. 3186, p. 85.

Internal secretions regulate instinctive behaviour. The instinctive behaviour of a young man in the presence of the opposite sex



depends mainly on the state of his endocrine system, and the unreasoning fractiousness of the climacteric woman merely reflects the chaos into which this system falls, when its keystone is displaced. The influence of these glands on secondary sex characters is complex. The man with hyperthyroidism shows feminine traits; hyperpituitarism leads to virilism, hypopituitarism to feminism; increase in adrenal cortex, while producing premature sex development in children, leads to marked virilism in women. According to Blair Bell, all of the endocrine glands, acting in harmony control metabolism, in accordance with the needs of reproduction, and adapt the whole organism, psychically and physically to this end. The endocrines not only develop some characteristics but they repress others, and their activities are correlated to a large extent by the autonomic nervous system. This system consists of two great divisions, the sympathetic and the parasympathetic or extended vagus. The former is katabolic, converting potential energy into kinetic, and facilitating outward manifestation of that energy, while the latter is anabolic, directing energy inwards, where it is stored up. When distributed to the same structure, their action is always antagonistic, and when one is stimulated, the other is inhibited. The rhythm of life depends largely on the fluctuating balance of these two. Each of these divisions cooperates with a group of endocrine glands, the sympathetic, with the adrenals, thyroid, and pituitary, the parasympathetic mainly with the digestive organs and their annexes. The sympathetic mechanism is a defensive one, not only against the external, but also against the internal foe. Cramer regards the heat regulation of the body as mainly effected peripherally, and has shown that anything which calls for increased production of heat, increases the secretory activity of the thyroids and adrenals. He points out what a profound effect therefore, climate must have on the endocrine glands. Leonard Williams previously has said, that the skin may be compared to a sensitive plate, stimulation of any portion of which will produce reflex activities, in some distant organ, and he regards the formation of cutaneous pigment as protective against such stimulation becoming excessive. We are justified in saying that climactic environment can modify the psychic make-up, through the endocrine glands. The position of the thyroid in the endocrine system, is that of a powerful activator of metabolism. In this respect it cooperates with the adrenals and pituitary, and antagonizes the pancreas and

parathyroids. On the nervous side it cooperates with the sympathetic nervous system, both being stimulated to increased activity by it, and lowering the threshold of stimulation to it. This is the vicious circle in hyperthyroidism, and it is an important part in both external and internal defence. Externally it leads to greater manifestation of energy in the direction of fight or flight, and internally it quickens the reaction to bacterial invasion. An important way in which it accomplishes this, is by the mobilization of blood sugar, which increased supply of sugar may be utilized for increased energy in external defence, or for heat production, in the febrile reaction in internal defence. As a provision against waste the renal threshold is raised, with a resulting hyperglycaemia without glycosuria. Yet under emotional strain even this threshold may be reached with a resulting glycosuria. The thyroid also interacts with the gonads, which may account for the disturbances which are so apt to occur in the gland after an artificial or natural climacteric. In the former this is apt to take the form of an intermittent hyperthyroidism, and in the latter, hypothyroidism. The combination of a distressing emotion of matrimonial origin, with a toxemia of intestinal origin is the most fertile cause of hyperthyroidism.

L. C. JOHNSON.

GOETSCH, E.: **Further Studies on the Pathological and Clinical Significance of Diffuse Adenomatosis of the Thyroid Gland.** *Endocrinology*, January, 1922, vi, No. 1, p. 59.

Attention is drawn to the group of borderline nervous patients who present many difficulties in diagnosis, who complain of symptoms resembling mild hyperthyroidism, incipient tuberculosis, effort syndrome, psycho-neurosis, neurasthenia, and other allied nervous states. In diffuse adenomatosis there is no exophthalmos, but the thyroid is slightly enlarged, but does not present thrills or bruits. It does show a striking increase in the interstitial cellular tissue and atrophy or partial disappearance of the colloid acini, which picture is histologically different from any other form of goiter. The patients react positively to the author's epinephrin hypersensitiveness test, whereas the metabolic rate may be within normal limits. Treatment consists of resection of approximately three-fourths of each thy-



roid lobe, and considerable success has been obtained in a small series of cases. The term diffuse adenomatosis is restricted to the condition where there is a general diffuse overgrowth of the interstitial epithelial cells as against the hyperplasia of the normal alveolar epithelium. The origin and nature of diffuse adenomatosis is a new conception in the pathology and clinical significance of thyroid disorders.

L. C. JOHNSON.

HALL, A. J.: **Encephalitis Lethargica.** *Lancet*, March 18, 1922, ciii, No. 5142, p. 526.

Hall reported a series of 16 cases of encephalitis in 1918 without any mortality. Since then he has had under observation 30 more cases with a fatal issue in 11. The mortality of the combined series of 46 cases is therefore about 24 per cent. This is exactly the same as a series of 317 cases studied by other observers with a mortality of 79 or 24 per cent.

He divides the cases into three groups: *Group 1.*—Mild or abortive. This group includes 5 cases. One of these had myoclonic contractions of the abdominal muscles.

*Group 2.*—Fourteen cases of medium severity; 4 of these recovered completely; 10 cases were left with residuals as a Parkinsonian complex, paraplegia, muscular jerkings, mental deterioration.

*Group 3.*—Eleven fatal cases. Of these one died from influenza six months after the attack of encephalitis; one case had a double parotitis.

The author knows of no way of foretelling the outcome in any case. The mildest cases may leave permanent sequelae.

H. JOACHIM.

ROGERS, J.: **Adrenal Feeding in Conditions of Hyperthyroidism.** *Endocrinology*, January, 1922, Vol. vi, No. 1, p. 73.

Experimentally, the feeding by mouth to dogs of derivatives of the entire adrenal gland, especially the adrenal nucleo-proteins and a slightly hydrolyzed aqueous extract, known as adrenal residue

causes the animals thyroid to gain from 50 to 75 per cent more in its iodine content within a few weeks. Feeding with corresponding amounts of adrenalin crystals is without appreciable effect upon the thyroid. In conditions of hyperthyroidism the thyroid gland contains less than the normal amount of iodine per gram of gland substance. The failure thus indicated of the thyroid to retain its normal amount of iodine is apparently due to a defect in the metabolism of iodine by the thyroid epithelium, and this defect is the probable biochemical cause of the disturbance. The thyroid epithelium is supposed to receive a parasympathetic (vagus) nerve supply, which accelerates or "drives" its metabolism of iodine, and a sympathetic which "checks" it. The product of the thyroid, containing iodine, after its utilization (or any ingested thyroid material or iodine) returns to its epithelial source, where it enters the epithelium only through the intermediation of the parasympathetic nerve terminals. The ensuing chemical processes or metabolism into a normal thyroid product requires the normal functioning of the sympathetic or "check" nerve terminals in the thyroid. It seems probable that the adrenal product acts through or upon these terminals, and therefore the functional integrity of these terminals is essential for the success of adrenal feeding. Cases are cited in which there was decided recovery from symptoms under the combined feeding of adrenal residue or the nucleo-protein material combined cautiously with the iodide of iron. In each case there was however a recurrence of symptoms, except in one case which had had a previous lobectomy.

L. C. JOHNSON.

BARKER, L. F., AND SPRUNT, T. P.: **A Spontaneous Attack of Tetany During a Paroxysm of Hyperpnea in A Psycho-neurotic Patient Convalescent From Epidemic Encephalitis.** *Endocrinology*, January, 1922, vi, No. 1, p. 1.

During the examination of the patient, there was a typical attack of tetany, which apparently resulted from prolonged hyperpnea. There was however no evidence of latent tetany nor any hyperexcitability of the peripheral nerves. The case is reported as an example of tetany brought about as an acute manifestation of the chemical changes in the body incident to hyperpnea. Grant and Gold-



man conducted a series of experiments in apparently normal men who showed no signs of latent tetany. They were able to produce tetany in each instance after deep breathing at the rate of twelve respirations per minute continued for from thirteen to seventeen minutes. The alveolar carbon dioxid tension fell, the blood became slightly more alkaline, the urine became decidedly alkaline, the plasma bicarbonate was reduced, the ammonia excretion was diminished, and there was a slight increase in the calcium content of the blood. After these changes had occurred, tetany was found to develop. They explained these changes by the disturbed ratio of carbonic acid and bicarbonate in the blood by the rapid washing out of carbon dioxid in the period of increased ventilation. Disturbances of the acid base equilibrium have been previously noted in tetany, and a period of alkalosis has been observed in dogs just previous to an attack of tetany. It was found that the injection of acid or calcium salts relieved the tetany and the beneficial effect of calcium was attributed to the fact that calcium phosphate was formed from the carbonate thus liberating hydrochloric acid. It is difficult to bring the two types of disturbance into relationship with parathyroid deficiency, but it seems possible that the latter may bring about a disturbance of acid-base equilibrium in the body and hence produce tetany, and that hyperpnea brings about the same condition, but more quickly, and without intervention of the parathyroids.

L. C. JOHNSON.

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# INTERNATIONAL MEDICAL DIGEST

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## SECTION ON GENERAL MEDICINE

HAY, J.: Cardiac Pain. *The Lancet*, May 6, 1922, cccii, No. 5149, p. 885.

Sir Clifford Allbutt thinks that angina pectoris is due to disease of the investment of the aorta or pericardium or to coronary atheroma. The author is not in accord with this view because fatal angina pectoris may occur without any demonstrable aortic, coronary, or cardiac pathology. Heberden thought that angina was due to a cardiac spasm. Sir William Osler classified cardiac pain as syphilitic, arteriosclerotic and neurotic. The degree of pain is no evidence of the amount of cardiac involvement. The toxic and vasomotor types oftenest give the most excruciating attacks.

There are two types of cardiac pain, supramammary and submammary. The former is associated with a sense of constriction and radiation into the arms, while the latter gives pains radiating to the back, axilla and scapula. The supramammary is said to be the more serious. Occasionally the pain is epigastric and is then often mistaken for a gastric condition. The radiating pains in the arms are sometimes mistaken for neuritis.

Cardiac pain is an evidence of cardiac exhaustion. The intercostal muscles, triangularis sterni and other muscles may become reflexly exhausted from cardiac pathology and may account for the tenderness often found over these muscles.

H. JOACHIM.



SMITH, A. H., DEUEL, H. J., ISCHAM, L., AND SEIBERT, F. B.: **Yeast Therapy and Uric Acid Excretion.** *The Journal of Laboratory and Clinical Medicine*, May, 1922, vii, No. 8, p. 473.

At present bakers yeast is being widely recommended and used as a therapeutic agent for treatment of various ill-defined irregularities of metabolism. The familiar cake of compressed yeast represents a mass of living cells containing nucleoproteins which are purine-yielding precursors of uric acid. It is also conceivable that yeast may influence endogenous uric acid formation through an effect on cellular metabolism.

Experiments have been reported in which "nutritive yeast" (evidently a dried product) caused an increased excretion of uric acid, and also other experiments which showed that dried yeast led to an increased content of uric acid in the blood and urine. The uric acid excretion represents the end-product of metabolism of not only the food purines but also the purines derived from body cells, *i. e.*, it may have of both endogenous and exogenous origin. The question therefore arises whether the therapeutic dose of yeast, though unimportant as a source of exogenous uric acid, might prove to be a stimulus to metabolism such as would be reflected in an increase in the endogenous uric acid.

From the experiments it was found that there is no evidence to show an increase in uric acid excretion following the ingestion of the commonly recommended therapeutic dose of live baker's yeast. When twice, three times and five times this dose was taken there was likewise no increase in the uric acid excretion over the level attained on a purine-low diet. Viable yeast cells appeared in the feces in large numbers during the yeast period but disappeared promptly after the ingestion of yeast was stopped.

C. M. ANDERSON.

GOLUB, M.: **Inferences on Achylia Gastrica.** *Medical Record*, April 1, 1922, ci, No. 13, p. 540.

The amount of gastric secretion is a factor of wide variability and consequently an inference as to an individual's acidity based

on a single examination of the stomach contents is unreliable. Often where true achylia is established it is not incompatible with health; and when accompanied by ill health is not necessarily carcinoma. The author is therefore inclined to believe with De Quervain, that achylia gastrica has no differential import.

It may be not unwise for the practitioner to attribute achylia gastrica to an advanced organic disease of the gastric glands but only as a working hypothesis for further substantiation and not as a final pronouncement of a fatal prognosis.

R. BENNETT.

BARR, D. P., CECIL, R. L., AND DuBOIS, E. F.: **Clinical Calorimetry.**  
**XXXII. Temperature Regulation after the Intravenous Injection of Proteose and Typhoid Vaccine.** *Archives of Internal Medicine*, May, 1922, xxix, No. 5, p. 608.

This paper is best summarized in the words of the authors.

Eight calorimeter experiments have been made on subjects after the intravenous injection of proteose and of typhoid vaccine. In five of these it was possible to observe the phenomena of chills. With the onset of a chill there is a sudden increase of from 75 to 200 per cent in heat production, due in part, to shivering. At the same time there is almost no rise in heat elimination. This discrepancy between heat production and heat elimination causes the storage of a large amount of heat within the body. After the chill there is a short period of level temperature when the heat production and elimination are about equal and both are from 20 to 40 per cent above the basal level. Following this, as the temperature falls there is usually a steady decrease in the heat production until it reaches the normal level. The heat elimination, on the other hand, increases still further, thus getting rid of the stored heat. During the falling temperature there is never as large a discrepancy between heat production and elimination as during the chill. "The respiratory quotient tends to be high during the chill, indicating the rapid combustion of the glycogen stores of the body. After the chill the quotient falls steadily."

By means of a comparison of the heat production and heat elimination it is possible to determine the temperature changes of the body



as a whole and compare them with the changes in rectal temperature. The rectal temperature indicates, in a general way, changes in average body temperature, but it is possible to have a rise in rectal temperature while there is a fall in average body temperature. The opposite is also true.

The heat lost in the vaporization of water from the skin and lungs bears a fairly constant relationship to the total heat elimination but has no relationship to the heat production during rapid changes in temperature. Study of the water elimination in fever affords no evidence that the body is unable to mobilize water for heat elimination. Fever should not be attributed to failure in the function of water elimination.

Observation in this and in other fevers has demonstrated that rise in body temperature is accompanied by increased heat production, the amount of which corresponds to the degree of fever. It is found that this increase follows van't Hoff's law, which may be stated as follows: "With a rise in temperature of  $10^{\circ}$  C. ( $50^{\circ}$  F.), the velocity of chemical reactions increases between two and three times.

The phenomena of the chill following intravenous injection of proteose or vaccine are strikingly similar to those of the malarial paroxysm, the method of temperature regulation being almost identical.

T. HOWARD.

Young, J. G.: **Chronic Intestinal Stasis.** *Illinois Medical Journal*, March, 1922, xli, No. 3, p. 201.

Intestinal stasis or putrefaction is defined as that condition resulting from a poisoning of the system by a retention of the contents of the intestinal canal for a longer time than can be taken care of normally. It is not the same as constipation. Any mechanical change in the canal causing retention of material that should be excreted and more absorption than can be taken care of by the body, forces secretions and poisons into the intestines producing symptoms of stasis. There may be kinks, stenosis and constrictive bands as the cause and these are divided into three types:

(1) Congenital constriction, as in pyloric stenosis in the new born.

(2) Ulcerative or inflammatory processes followed by constrictions during the act of healing.

(3) Bands and adhesions which may be:

(a) Congenital, in which adhesions normally found in the fetus have persisted.

(b) Inflammatory.

(c) Evolutionary. For example, pull on various organs as a result of prolapse of the abdominal viscera, causing a condensation of the tissue, followed by a marked thickening of the peritoneum and later formation of bands.

Typical symptoms of this disease: (1) Abdominal distress; (2) coated tongue; (3) frontal headaches; (4) loss of strength; (5) constipation; (6) despondency; (7) nodules in the breasts; and (8) cold clammy hands and feet.

*Treatment.*—(1) Dietetic and mechanical means. The "First or Medical Group". Early cases yield to this method of treatment.

(2) Surgical treatment. Especially in late cases to break up adhesions, bands, etc. This method of treatment should be tried only after medical treatment fails.

G. H. LORDI.

GERLACH, W.: **Periarteritis Nodosa** (Ueber Periarteriitis Nodosa)  
*Klinische Wochenschrift*, March 4, 1922, i, No. 10, p. 467.

The author cites the case of a thirty-seven year old man with diffuse muscle and joint pains with evidences of a neuritis and cortical irritation. The patient died. The diagnosis during life was Landry's paralysis. The autopsy revealed an infiltration of the outer coats of the arteries of the dura, peripheral nerves, spleen, kidney and liver with the typical nodules of periarteritis nodosa as originally described by Kussmaul and Maier. These nodules involved the outer coats of the arteries and encroached upon the intima. They consisted of round cell infiltration, granulation tissue, secondary hemorrhage; occasionally small miliary aneurysms were formed. The etiology of this disease is obscure. The syphilitic, infectious and toxic theories are discussed.

H. JOACHIM.



FISCHBEIN, L.: *Achylia Gastrica*. *Boston Medical and Surgical Journal*, March 30, 1922, clxxxvi, No. 13, p. 413.

Primary achylia gastrica does not occupy the prominent position in the pathology of the intestinal tract that it did a few decades ago. In a careful study of 30 cases of primary achylia gastrica hypermotility was found in every instance, the acids and ferments were either entirely absent or, as in a few cases, present in small amounts, and the total acidity was from 0-15, in the majority of cases below 10. The symptoms present can be divided into three groups. (I) Patients complain of fullness or distress in the gastric or abdominal region coming on immediately or shortly after meals, dryness of lips and tongue, and a disagreeable taste in the mouth. In some cases a considerable distention of the abdomen is present. Constipation is the usual rule. (II) In this group the symptoms are more pronounced and may simulate organic disease within the abdomen. Lancinating pains or painful pressure, coming on a few hours after meals and often accompanied by nausea and vomiting, occur. (III) In this group the stomach symptoms are few while the symptoms referable to the nervous system are numerous and pronounced. Such symptoms as dizziness, poor sleep, tightness around the head are often present and objective abdominal distention and some superficial tenderness. However the diagnosis rests entirely upon the gastric analysis. The author believes that primary achylia is a gastric neurosis and is part of a general neurosis. The treatment of primary achylia is general, dietetic, and medicinal. The general treatment comprises a variety of methods of which psychotherapy is the most important and includes, besides persuasion and encouragement, rest, recreation and physical exercise. The diet consists of a mixed diet which excludes those foods that might cause irritation and distention of the stomach. Such a diet consists of bread and butter, well cooked cereals, lean fish baked or broiled, lean meats broiled or roasted, cooked vegetables in purée form, simple puddings made with butter, baked, cooked or stewed fruits, light coffee or tea, with milk. All fried foods, smoked or salted meats or fish, pastries, spices, raw fruits and vegetables, and salads are excluded. Raw milk, heavy cream and thin soups are not well borne. Medicinally, while the indication for HCl rests upon rational ground, dilute HCl has been found by the author to be of no benefit and in some cases seemed to

aggravate the dyspeptic symptoms. Neither has nux vomica or cinchona compound been of benefit. On the other hand drugs like the bromides, chloral hydrate, extract of valerian, tincture of opium, have been found of decided benefit in achylia.

M. M. BANOWITCH.

TAYLOR, N. B.: **The Blood-flow in Man Estimated by the Calorimetric Method of Stewart.** *The Journal of Laboratory and Clinical Medicine*, May, 1922, vii, No. 8, p. 439.

The author discusses several methods of blood-flow estimations, among which are the plethysmographic method, and the gasometer method. The author used the calorimetric method as devised by G. N. Stewart. In this, the flow through the hand (or foot) is computed from the heat which the blood coursing through the vessels of the part gives off to a known body of water contained in a calorimeter and in which the hand or foot is immersed. By this method the blood-flow can be estimated practically uninterruptedly over prolonged periods, and yet the method is sensitive enough to register fairly abrupt changes throughout the course of an experiment. The method, however, can be used only in connection with those parts of the body which are readily accessible, namely the hands and feet.

The author summarizes his experiments as follows:

From a large number of blood-flow determinations upon normal individuals it has been found that the amplitude of the flow differs widely in different persons; that the flow fluctuates spontaneously to the extent of several grams per 100 c. c. per minute in the same individual during the course of the experiment; and that marked alterations in the flow are effected by changes in the temperature of the atmosphere.

The flow in the hand may be influenced reflexly by applications of heat or cold to either hand or foot. Thus, immersion of the hand in hot or cold water produces a rise or fall, respectively, in both hands. The response to draughts is similar in nature to the response following the immersion of the hand in cold water. Heat applied to the feet produces in some people a rise and in others a fall in the blood-flow through the hands; the particular effect produced is constant for the same individuals.



Local exercise produces a drop in flow of the opposite hand. The flow in the exercised hand is increased in some cases and reduced in others, the effect being unpredictable.

C. M. ANDERSON.

LUNDGAARD, C.: **The Clinical Examination of Irregular Pulses** (Ueber die Klinische Pulsuntersuchung bei Patienten mit unregelmässigem Puls). *Klinische Wochenschrift*, March 4, 1922, i, No. 10, p. 461.

The general impression prevails that the study of the cardiac irregularities is one for the specialist and can only be made by electrocardiographic and sphygmographic examinations. The author has made a special study of arrhythmia perpetua.

In 1912, Robinson and Draper, of the Rockefeller Hospital gave the name of pulse deficit to a discrepancy in the rate of the cardiac and pulse frequency. The author has studied 18 cases of arrhythmia perpetua and found the pulse deficit to vary from 2 to 82 per minute. The discrepancy was greatest in those cases in which there was a tachycardia—sixteen of these cases had mitral lesions and 2 were cases of hyperpiesis.

Pulse deficit occurs in auricular fibrillation, in extrasystoles which are not powerful enough to reach the wrist, in paroxysmal tachycardia and in partial heart block. In extrasystolic pulse deficit, the heart maintains a rhythm, usually does not beat excessively rapidly and the extrasystoles usually become less and disappear on effort. The effect of exercise was then studied in nine cases. In each case the pulse deficit was markedly increased from that of rest. In one case the difference amounted to 118.

It has been emphasized by Wenckebach, Mackenzie and Lewis that the cardiac efficiency depends just as much on the way the heart performs its function as on its strength. In the arrhythmias the proper amount of blood is not expelled from the heart. This reacts on the circulation as shown by the diminished oxygen tension of the blood.

The amount of pulse deficit is a good rough index for measuring cardiac efficiency. A decrease in the pulse deficit is a good prognostic sign of improvement in cardiac function. An increase in radial pulse during digitalis therapy is of good significance if at the same

time the apex rate is diminished. If under digitalis therapy the pulse deficit does not appear with moderate exercise, it is reasonable to assume that the cardiac efficiency has been re-established.

H. JOACHIM.

MAGNUS, A. E.: **Recognition of Cardiac Arrhythmia Without Graphic Methods** (Erkennung und Beurteilung der Herzarhythmien ohne Graphische Methoden). *Klinische Wochenschrift*, January 1, 1922, i, No. 1, p. 25.

The knowledge of the irregularities of the heart beat has been attained by means of graphic methods. This has been supplemented by electrocardiographic studies. The opinion now prevails that the recognition of the cardiac arrhythmias is impossible without these methods. This is not the case. After the characteristic features of these arrhythmias are once recognized, they can be diagnosed by inspection, palpation and auscultation.

The most frequent and least significant irregularity is the respiratory arrhythmia. During inspiration, the rapidity is increased and this diminishes with expiration. On account of its frequency in children, this type has been called the juvenile arrhythmia. It is probably produced by vagal influences, as it disappears under the use of atropin.

Extrasystoles are produced by an extra stimulus. The premature beat is followed by a compensatory pause. It is impossible to differentiate the auricular from the ventricular extrasystole without graphic means. Extrasystoles may not be transmitted to the radial artery if they occur before the ventricle is sufficiently filled with blood, the so-called frustrated extrasystoles. Extrasystoles occur in perfectly normal functioning hearts. When they occur between the ages of 40 to 50, they may be the result of sclerotic arteries, or myocardial processes. Digitalis may be the cause (bigeminus). Vagal extrasystoles disappear after the use of atropin.

Disturbances in conduction can be recognized by dissociation of the venous pulse and ventricular contraction. This may be partial or complete, permanent or temporary. It is usually produced by some disturbance in the conduction system between the Keith-Flack node and Tawara's node or in His bundle. Temporary blocks are



usually toxic. Complete block usually gives Adams-Stokes syndrome.

The most interesting and thoroughly studied irregularity is the arrhythmia perpetua, usually due to an auricular fibrillation from disorganized auricular contraction. This usually follows conditions in which the auricles are overstretched as in mitral stenosis. The condition can be easily recognized clinically without the aid of graphic registration.

Paroxysmal tachycardia can be recognized from the history and from examination during the attack. It is probably due to an auricular flutter in which all or nearly all of the auricular contractions are transmitted through His bundle.

Pulsus alternans occurs in severe myocardial disturbances and in nephritis. It must be differentiated from extrasystoles. The prognosis of pulsus alternans is always extremely grave.

H. JOACHIM.

STURGIS, C. C., PEABODY, F. W., HALL, F. C., AND FREMONT-SMITH, F.: **Clinical Studies on Respiration. VIII. The Relation of Dyspnea to the Maximum Minute-volume of Pulmonary Ventilation.** *Archives of Internal Medicine*, February, 1922, xxix, No. 2, p. 236.

*The Maximum Minute-volume In Young Men.*—These observations were made on twelve normal men who rode on a stationary bicycle until they were forced to stop on account of complete exhaustion. The volume of air breathed was measured by conducting the expired air through a Bohr meter. During the last one and one-half minutes of the ride, when the exercise was most violent and the dyspnea great, the average minute-volume of air breathed was 60.5 liters, or approximately twelve times the average minute volume of such a group of men when they are lying down at complete rest.

These figures give a general indication of the normal pulmonary reserve, by virtue of which the individual is able to increase pulmonary ventilation and keep it adequate to the needs of the body when the metabolism is raised far above its resting or basal value by severe exercise. An analysis of these high minute-volumes show that they were obtained by increasing the rate of inspiration up to an average of about 35 per minute, and by increasing the depth up to a volume

which approximates one third the vital capacity of the lungs. On this basis it was suggested that the minute-volume which can be maintained for more than a short period can be calculated in any given instance with an accuracy which is sufficient for practical purposes, by multiplying one-third of the vital capacity of the lungs by thirty-five. Such a calculated or theoretic maximum minute-volume has considerable clinical significance for it tells about how far the person concerned is able to increase his minute-volume and consequently how great an increase of metabolism he can meet with pulmonary ventilation which will insure proper aëration of the blood in the lungs. The maximum minute-volume calculated in the above manner is thus a guide to the amount of physical exertion that any individual may be expected to undertake.

R. H. BENNETT.

COLEMAN, W., BARR, D. P., AND DUBOIS, E. F.: **Clinical Calorimetry.**

**XXX. Metabolism in Erysipelas.** *Archives of Internal Medicine*, May, 1922, xxix, No. 5, p. 567.

A study of the metabolism in erysipelas, which involved ten calorimetric experiments in five cases of this disease, is presented. Eight of the studies were made during the febrile period of the disease and two after the crisis. It was found that during the fever the metabolism was increased 19 to 42 per cent above the average normal basal. There was a rough parallelism between the degree of fever and the increase of metabolism. A temperature of 40° C. was found to involve a heat production of about 40 per cent above the normal. During the fever both the heat production and heat elimination were maintained at a high level. While a normal individual accomplishes about 24 per cent of his heat elimination by the vaporization of water, it was found in the cases of erysipelas studied that vaporization of water constituted from 23.6 to 33.4 per cent of the total heat elimination. A comparison of the findings in this disease and typhoid fever showed no specific differences. Both fevers show approximately the same increase in the level of heat production for the same increase in temperature. The protein metabolism is greatly increased in both.

T. HOWARD.



ARMANGUE, M., AND GONZALES, P.: **Studies on the Formol and Wasserman Reactions.** *The Journal of Infectious Diseases*, May, 1922, xxx, No. 5, p. 443.

Recently Gaté and Papacostas reported a new reaction of syphilitic serum. According to them positive serums gel under the influence of formol while negative serums remain fluid. The authors compared the results of the Wassermann and formol reactions in 174 serums of suspicious cases. A positive reaction to formol was obtained in 67 per cent of the cases of malignant tumors which gave a negative Wassermann reaction, and this was a higher percentage of positive reactions among patients with malignant tumors than among syphilitic cases. The results obtained are thus tabulated.

Wassermann reaction	Formol reaction
41 strongly positive.....	11 positive 4 doubtful 26 negative
6 weakly positive.....	1 positive 1 doubtful 4 negative
127 frankly negative.....	5 positive 1 doubtful 121 negative

It seems fair to conclude that the formol reaction is not due to some specific substance but to a relative increase of the usual constituents of normal serum, possibly the globulins.

M. M. BANOWITCH.

TENNICLIFF, R.: **The Action of Neoarsphenamin and Neosalvarsan on the Phagocytic Activity of Leukocytes.** *The Journal of Infectious Diseases*, May, 1922, xxx, No. 5, p. 545.

In proper concentrations, neoarsphenamin and neosalvarsan may increase the phagocytic activity of leucocytes, both in vivo and in vitro. In vivo the stimulating effect is rapid and of short duration, occurring, as a rule, within 30 minutes after intravenous injection. Further study is necessary to determine what part, if any, this stimulus of the phagocytic activity of the leucocytes plays in the curative action of neoarsphenamin and allied products.

M. M. BANOWITCH.

WILHELM, C. M.: **Sources of Error in the Epstein Method for Blood Sugar Determination and a Modified Technic.** *The Journal of Laboratory and Clinical Medicine*, May, 1922, vii, No. 8, p. 489.

The Epstein method for the determination of blood-sugar, using .2 c. c. of blood is in reality a modification of the original Lewis and Benedict procedure, and its simplicity makes it an ideal method for use in clinical investigation. In a few preliminary determinations, however, the results obtained seemed too high, and it was considered advisable to check the method before further work was done.

The following conclusions were made: The Epstein method for blood-sugar determinations when checked against standard glucose solutions and blood, gives results which are always too high and the per cent of error is not constant. This source of error is due (1) to the use of too great a concentration of alkali, (2) too much heat, and (3) concentration of the protein free filtrate to too small a volume both before and after the addition of alkali.

The modification given brings the accuracy of the Epstein method reasonably up to that of the Lewis and Benedict procedure.

C. M. ANDERSON.

ADAMS, R. D., AND PILLSBURY, H. C.: **Position and Activities of the Diaphragm as Affected by Changes of Posture.** *Archives of Internal Medicine*, February, 1922, xxix, No. 2, p. 245.

The authors endeavored to determine the position of the diaphragm in several positions. They choose as subjects normal persons.

In their studies, a fixed point, arbitrarily chosen was selected on the first lumbar vertebra. Variations in height of the diaphragm are measured on a line drawn from this point parallel to the vertebral column. In a state of normal inspiration, the distances above the marker of the right and left domes respectively are:

Standing: 6.5 and 5 cm.

Sitting: 5.5 and 3 cm.

Prone on abdomen: 12 and 9 cm.

In all three positions, the excursion during normal mixed breathing is about equal on the two sides and varies from 1.5 to 2.5 cm. in extent.



With the assumption of the right prone position, during quiet breathing the excursion of the dependent half of the diaphragm is greater than that of the upper, the ratio being approximately 2:1. Recumbency on the left side reverses conditions.

*Neighboring Organs.*—The position of the heart, accompanying changes in position of the diaphragm, is subject to wide range. The extreme excursion is 6 cm.

Marginal sounds are heard over the healthy lung and are not incidental to or dependent upon pathology in the lung or pleura. They are heard over a broad area on the dependent side in lateral decubitus because of the greater extent of the complementary space. These sounds are heard best during vigorous inspiration following forceful expiration.

In lateral recumbency, the dependent lung is relatively relaxed. Its diaphragmatic ventilation is in excess of that of the upper lung. Breath, voice, and whisper sounds and tactile fremitus are all increased as compared with the opposite side.

R. H. BENNETT.

KIRKPATRICK, H.: *The Etiology of Cataract.* *British Medical Journal*, March 25, 1922, No. 3195, p. 467.

Cataract is the result of the fibres or cells of the lens, and primary cataract is nearly always bilateral. Certain conditions are generally admitted to predispose to the development of cataract, such as senility, diabetes, pellagra, ingestion of poisons, rickets, but an hereditary predisposition to the disease exists. Convulsions of the type found in tetany have frequently been followed by cataract, as it has also been observed to follow the removal of the thyroid gland. Senility is perhaps the condition which is most frequently associated with cataract, and failure of the generative glands to function, is a leading feature of senility. A fair amount of evidence exists, suggesting that a defective function of the endocrine organs may be one of the essential causes of primary cataract. From clinical observations and from the known effect of thyroid and parathyroid deficiencies upon tissues allied to the lens, it might be expected that disturbances in the function of these glands would most likely prove determining factors. Such disturbances need not however, necessarily occur in these glands,

but may be dependent upon a failure in the function of other endocrine organs. The cause of primary cataract is probably a constitutional one, and most of the morbid conditions which are associated with the development of primary cataract, injuriously affect the action of the endocrine glands. Exposure to injurious heat and light rays and the existence of an uncorrected error of refraction are likely to determine the formation of a cataract in the eye of a person who is predisposed to a degenerative change in his lens fibres by a constitutional defect.

L. JOHNSON.

SAJOUS, C. E. DE M.: **Adrenal Insufficiency from the Viewpoint of the Clinician.** *Endocrinology*, March, 1922, vi, No. 2, p. 197.

What has been termed "hypoadrenia" is a condition often observed late in acute febrile infections in which a reduction of chromaphil or medullary substance has been repeatedly demonstrated at autopsies. It occurs normally in old age, and has been shown histologically to be due to progressive vascular atrophy of the adrenals. Study of a case of bronzing, suggested that the pigmentation was due to an accumulation of adrenal substance similar at least to melanin, in the cutaneous epidermal layer, and that hematoïdin found broadcast in the tissues was similar to the cutaneous melanin. The author had also described the adrenal substance forming at least a part of both hematoïdin and melanin, as an oxidase (adrenoxidase). That adrenanin does take part in pulmonary and tissue respiration has been urged for twenty years, after long laboratory studies. The presence of the colloid hyalin granules which constitute the adrenal secretion in the adrenals themselves and also in their efferent veins, which in turn carry the adrenin-laden blood to the inferior vena cava, is so well established, that testimony to this effect is unnecessary. Its presence in the caval blood is shown by the fact that when this blood contains adrenin in deficient quantity, the functions of the heart are depressed, while an excess in the same blood increases the tone. Not only is adrenin present in the lungs, but it seems to facilitate the circulation of air in the air-cells, by causing dilatation of the bronchioles. It has been shown that adrenin can act as hemoglobin, and blood from the adrenal vein assumes the bright red color



of oxyhemoglobin in one to twenty minutes after diluting with water, while that of other organs remains dark in color. Adrenin increases the intake of oxygen, the output of  $\text{CO}_2$ , the volume of air breathed, and the depth and rate of respiration. That adrenin takes part in tissue oxidation is shown by its influence on the temperature, basal metabolism, and urea excretion, while the converse occurs sooner, or later after the removal of both adrenals.

The adrenals then, secrete a chromogen, a colloid hyalin fluid which leaves the organs through the suprarenal veins, and is mixed with the plasma of the venous blood in the inferior vena cava. When the venous blood reaches the pulmonary alveoli the marked affinity of the adrenalized plasma for oxygen causes it to absorb this gas from the alveolar air. The carbon dioxide of the blood is thus forcibly replaced by oxygen, and expelled with corresponding vigor. The red corpuscles after this operation, bathe in an oxygen-laden medium, and their hemoglobin becomes reconverted into oxyhemoglobin.

The suddenly produced morbid process which double adrenalectomy entails differs entirely from that recognized as hypoadrenia by clinicians. For them hypoadrenia means gradual failure of the adrenals, which renders these organs unable to supply the body at large the stock of adrenin it needs to carry on its respiratory functions, i. e., tissue oxidation. There comes a time when in addition to the symptom complex of the causative diseases there appear certain specific symptoms, which are those of gradual adrenal failure. They are precisely those observed in animals deprived of both adrenals anorexia, muscular weakness, progressing to paralysis, loss of tension of the eyeballs, gradual fall of the blood-pressure, and steady fall of the temperature until death ensues. Experimental data alone will not explain nor "exact physiological science" serve as a basis of criticisms of clinicians' observations. As a standard for pathological states which necessarily introduce many fundamental deviations from the normal, however, experimental physiology in normal animals tends to mislead. When a pathological state is produced in a normal animal by physiological methods, it portrays only what the same methods would provoke in man, and even then allowances would have to be made.

L. JOHNSON.

DANA, H. W., AND MCINTOSH, R.: **Obstruction of the Superior Vena Cava by Primary Carcinoma of the Lungs.** *The American Journal of the Medical Sciences*, March, 1922, clxiii, No. 3, p. 411.

The case reported was that of a cook 29 years old. He was white and unmarried. His chief complaint was breathlessness of two months' duration. Eight years previous to this illness he had scarlet fever and diphtheria simultaneously. Clinically there was absence of edema of the body below the waist. His face, neck, and chest were puffy, but there was no ascites demonstrable and his legs were thin. The discrepancy between the upper and the lower part of the body was the surprising factor on observation. The tumor and fluid in the left chest caused displacement of the heart 13 cm. to the right of the midsternum. The Wassermann reaction was reported strongly positive. No venereal infections were ascertained in his previous history. The tumor was a primary carcinoma of the lung with extension into the superior vena cava and metastasis to the liver. The mass covered the precordial area completely and parts of the pulmonic areas so that from the front, at autopsy, only the lateral portions of the right lung and the lower lobe of the left lung could be seen.

A. T. MAYS.

CECIL, R. L., BARR, D. P., AND DuBOIS, E. F.: **Clinical Calorimetry. XXXI. Observations on the Metabolism of Arthritis.** *Archives of Internal Medicine*, May, 1922, xxix, No. 5, p. 583.

These studies on the metabolism of arthritis corroborate the conclusion of Pemberton and his co-workers to the effect that there is no abnormality in the basal metabolism of such patients. One case of gout did show a slight change in the level of basal metabolism (23 per cent). A few estimations of the respiratory quotients after various types of food convinced the authors that there was no specific change in the ability to metabolize such foods by these patients. They conclude that the observations on arthritis deformans do not indicate that it is a disease of metabolism. If infectious in origin, it may be said that the infection is not accompanied by an increase in basal metabolism or by toxic destruction of body protein, although they ob-



served one case during a febrile period which showed a marked loss of body nitrogen while the energy requirement was more than covered by a liberal diet.

T. HOWARD.

**BIGELOW, G. H.: Intracutaneous Reactions in Lobar Pneumonia.**  
*Archives of Internal Medicine*, February, 1922, xxix, No. 2, p. 221.

It was hoped that by the study of a considerable series of pneumonia cases and normal and diseased controls, using antigens made from the various types of pneumococcus prepared in various ways, additional information might be obtained concerning the rôle played by allergy in pneumonia with special reference to crisis. Furthermore, it was hoped by varying the method of preparation and dose of antigens prepared from various types of pneumococci, it might be possible to obtain antigens sufficiently delicate to indicate the type of the infection. If this reaction should prove to be positive in the early stages of the disease, it might furnish an earlier, quicker and simpler means of type determination than can be obtained by the present method of mouse inoculation.

Nine different antigens were made and tested out. The most satisfactory for obtaining specific type reactions is made by autolyzing saline solution or distilled water suspensions of the various types of pneumococci.

Of 104 cases of lobar pneumonia, 11 (10.5 per cent) gave one or more intracutaneous reactions to only one type of pneumococcus used, while 46 (42.3 per cent) reacted to two or more types. Of 20 controls none showed the single type reaction, while 9 (45 per cent) showed the multiple type reaction.

The multiple type reaction and the single type reaction are sharply differentiated both as to time and character. The reactions elicited to a single type of pneumococcus were specific for the type of organism isolated from the patient. The reactions, elicited by multiple types of pneumococci in 42.3 per cent of the cases of lobar pneumonia and 45 per cent of the controls were not specific for the type of pneumococcus causing the disease.

In 10 per cent of the cases treated with Type I antipneumococcus serum, specific type reactions were obtained, and in 14.8 per cent not

so treated there were similar reactions. The longest period over which the specific type reaction was obtained was seventeen days. The largest number of specific type reactions occurred during the second week of the disease (6 cases) and the first week after the crisis (7 cases).

The reaction has not been demonstrated sufficiently early to be of service in directing specific serum therapy.

R. BENNETT.

STIVELMAN, B. P., HENNEL, H., AND GOLEMBE, H.: **Intrathoracic Equilibrium in Pneumothorax.** *American Review of Tuberculosis*, April, 1922, vi, No. 2, p. 95.

The effects of the changed intrathoracic condition in pneumothorax on the untreated side and on the circulatory apparatus are far-reaching. Therefore the mechanism of the intrathoracic equilibrium in pneumothorax should be thoroughly understood by the operator. With the mediastinum effectively fixed by adhesions, the effect of unilateral pneumothorax on the opposite side is practically negligible, for the rigid mediastinum will stand the brunt of the increased intrathoracic pressure on the pneumothorax side without transmitting it to the untreated side. In the presence of a flexible mediastinum the intrathoracic equilibrium in pneumothorax is very delicately adjusted. Any disturbance in the intrathoracic pressure on the treated side will have a proportionate effect on the pressure on the untreated side, as well as produce a readjustment in the position of the mediastinal structures. The "paradoxical movement of the diaphragm" and "pendular movement of the mediastinum" are phenomena frequently observed in radioscopic study of pneumothorax. These are better characterized as "movements of balance", and ~~ar-~~ in response to a delicately adjusted, constantly changing, and extremely labile intrathoracic equilibrium frequently existing in pneumothorax under the following conditions:—(a) Flexible mediastinum, that is, one relatively free from adhesions, and (b) insert diaphragm, that is, one free from adhesions and paralyzed. The practical significance of the results from the disturbance in the intrathoracic equilibrium in pneumothorax are as follows:—



(a) EFFECTS ON THE UNTREATED SIDE.—In the presence of a flexible mediastinum there will result a decrease in the size of the untreated hemothorax, with a corresponding compression of the untreated lung. This partial compression of the untreated lung may be of benefit in cases of bilateral involvement.

(b) EFFECT ON THE CIRCULATORY SYSTEM.—An increase in the intrathoracic pressure diminishes or totally abolishes one of the most important factors of the venous circulation, namely, the thoracic aspiration of the blood from the large veins into the right heart during inspiration. Such interference seriously embarrasses the venous return, thus favoring stasis or causing increased cardiac burden to compensate for this embarrassment.

(c) That sudden disturbance of the intrathoracic equilibrium may result in serious and often fatal, cardiorespiratory embarrassment, is illustrated by incidents frequently occurring during aspiration of cases of hydropneumothorax. That the distressing symptoms resulting from such sudden disturbances are quickly relieved by re-establishment of the preëxisting equilibrium is particularly noteworthy.

C. A. SCHMID.

HOOVER, C. F.: **Tracheal and Bronchial Stenosis as Causes for Emphysema.** *Archives of Internal Medicine*, February, 1922, xxix, No. 2, p. 143.

The modern interpretation of bronchial asthma originated with Biermer who conceived an essential difference to exist between stenosis in the remote branches of the bronchi and stenosis in the trachea. He regarded dyspnea of bronchial stenosis as essentially expiratory, because he believed that the active character of expiration of asthma produced a vicious circle; an active pressure on the lung compressed the boundaries of the respiratory units, the air cells were subjected to compression, and the air passages connecting them with the larger bronchi were also compressed; that is, the more active the expiratory effort, the greater grew the resistance to exit of air from the respiratory units. On this account the expiratory phase was supposedly much prolonged. Biermer says that the difference between tracheal and bronchial stenosis lies in the fact that the former is an inspiratory and the latter an expiratory dyspnea.

*Nature of Acute Emphysema.*—We are dealing with two phenomena; viz., bronchiolar hypertonus and emphysema of the lungs which consists solely of an increase in the pulmonary residual air.

Bronchial spasm is immediately attended with emphysema, diminution of vital capacity, inspiratory and expiratory dyspnea and lessened extensibility and compressibility of the lungs. The mechanism of bronchial spasm, with all its attending attributes, may appear and disappear with such suddenness that it seems inconceivable that the collective phenomena can have any other origin than a neuromuscular one.

*Tracheal Stenosis.*—Biermer's theory teaches that bronchial spasm is attended with an expiratory effort, which produces a vicious cycle by compressing the bronchial exits from the respiratory units. If this be true, a resistance anywhere in the tracheobronchial tree which is sufficient to demand expiratory compression of the lung should lessen the volume flow toward the latter part of expiration, as the intrapleural pressure rises, and result in emphysema and prolongation of the expiratory phase. If a strong muscular effort is needed to accomplish expiration against tracheal resistance, the same mechanism of expiratory stenosis should be operative that Biermer's theory teaches for bronchiolar hypertonus. If active compression of the distended lung by the employment of expiratory muscles produces a vicious circle of expiratory stenosis when there is bronchial hypertonus, then there is no reason apparent why the same process should not operate when the resistance to expiration is in the trachea.

*Experimental Tracheal Stenosis.*—A wooden box was constructed with a shelving top, which enabled the top of the box to be sealed with a glass plate laid in petrolatum. With an animal confined in this box it served as a plethysmograph. A cannula was inserted in the animal's trachea and connected with the exterior through a tube, which was passed through a rubber in a hole in the side of the box. Through a Meltzer cannula inserted in the pleural cavity, the intrapleural pressure was registered by means of a tambour. By the same means a cannula was connected with the dog's jugular vein. The animal could breathe the room air, or any other atmosphere, and by connecting the cavity of the box with the spirometer of a Benedict apparatus, could record the respiratory excursions and detect any modifications in the volume flow of air during expiration and inspiration.



The tracheal cannula connected through the side of the box with room air, and on the end of this tube one could fix various sorts of appliance and in this way give the animal any degree of stenosis to inspiration and expiration alike, or any degree of stenosis to expiration and leave inspiration unobstructed, or it could be reversed.

One of the greatest difficulties was to procure active expiration in an anaesthetized animal. It was only after a high degree of hyperpnea was induced by having the dog rebreathe an atmosphere of oxygen and carbon dioxid that active respiratory effort could be induced by shutting in a resistance to expiration.

This experiment showed that the only way in which tracheal resistance will increase the residual air in the lung is in conjunction with increase in the volume of respiratory excursion. In this animal the volume of excursion was increased from 70 c. c. up to 300 c. c. by rebreathing carbon dioxid, and the rate of respiration was increased from 36 to 52 per minute.

The phenomena described in this experiment do not occur in bronchial spasm. A patient who has a violent spasm can supply his oxygen needs perfectly well by a 25 per cent increase in the oxygen consumption and the minute volume of air. The residual air in the lung is greatly increased, although the increase in the minute volume of ventilating air is slight. In bronchial hypertonus without hyperpnea, emphysema is produced, but in tracheal expiratory dyspnea, emphysema is obtained only in the presence of hyperpnea, which must be superadded to the expiratory resistance.

The clinical and experimental evidence reveal an essential difference between the results of bronchiolar hypertonus and stenosis of the trachea. When the tracheal resistance to inspiration and expiration are equal, there is no increase or residual air in the lung. In the absence of hyperpnea, resistance to expiration in excess of that to inspiration will not increase the lung volume.

*Bronchial Hypertonus, Regional and of Any Degree.*—Moderate bronchial hypertonus produces emphysema when there is no active effort attending expiration. Expiration may remain a passive procedure and still be attended with emphysema. Several cases are given to support these statements.

The hypertonus may be regional. Several cases are given to illustrate this type.

*Duration Of Expiration.*—In cases with general bronchial hypertonus the expiratory phase in all patients with moderate hypertonus was longer than the inspiratory phase simply because the resistance to expiration was not sufficient to demand an active compression of the lungs. To cause a transition from passive to active expiration, the obstruction to the passage of air must be so great that the time required for passive expiration exceeds the tolerance of the patient's respiratory needs. So long as bronchial hypertonus will allow a passive expiratory phase, the patient will instinctively refrain from active compression of the lungs by simultaneous action of the abdominal and intercostal muscles. The active expiration demanded by stenosis of the bronchial tree is very exhausting. Resistance to inspiration requires only an increase in the force of activation of the muscles normally employed; but resistance to expiration not only requisitions muscles which are not normally employed but produces an unfavorable effect on the hydraulics of blood circulation in the thorax. These facts explain why a patient with moderate bronchial hypertonus will have the duration of the expiratory phase shortened after the administration of adrenalin. Adrenalin given to such a patient will also have the effect of diminishing the residual air in the lung and will increase the pulmonary vital capacity.

How is the expiratory phase affected in a patient who has a bronchial hypertonus so severe that an active expiration is demanded? The volume of each lung was so increased that the flattened diaphragm drew the costal borders toward the median line during inspiration, and the expiratory phase was accomplished by violent contractions of the abdominal muscles. These conditions are exactly such (according to Biermer's doctrine) as to create a vicious circle of dyspnea, and should have caused a prolongation of the expiratory phase with a lessened volume flow of air toward the latter part of expiration. The tracing however reveals the opposite. He was employing his utmost muscular strength during all of expiration and inspiration and the volume flow of air was uniform throughout the entire respiratory circle.

After the administration of 20 minims of 1:1000 adrenalin the volume flow toward the end of the expiratory phase was distinctly lessened, the patient had distinct inspiratory widening of his subcostal angle, and expiration was not attended with contraction of the abdominal muscles.



These experiments not only prove the fallacy of the doctrine of expiratory dyspnea in asthma, but also show the error of employing the prolongation of the expiratory phase as an index of the severity of bronchial spasm.

*Expiratory Compression Stenosis of the Bronchi.*—A dog on which a tracheotomy had been performed and two cannulas introduced, one into the trachea and one into the right pleural cavity was placed in the plethysmograph. The cavity of the box was connected with the reservoir of a Benedict apparatus and the passages to the cannister clamped so that there was a free movement to and fro between the confined air in the box which contained the dog and the air in the registering reservoir. By means of a tambour the pressure in the pleural cavity for each respiratory circle could be measured. On the tracheal cannula was placed a Y valve, the afferent limb of which was fitted with a clapper valve, while the efferent limb had its lumen modified at will by means of a screw clamp. The air pressure of the proximal side of the expiratory obstruction was measured by a tambour connected to the proximal side of the Y tube by a T tube. By this experiment it was found that the intrapleural tracings showed a pressure below barometric pressure of 70 mm. of water at the height of inspiration, and 30 mm. of water at the end of expiration. If these 30 mm. are added to the maximum intrapleural pressure attained during the expiratory phase the sum of these two factors exactly equals the pressure of the tracheal cannula, and the minute flow is constant during expiration. Under these experimental conditions there can be no resistance to exit of air intervening between the air cells and the point of obstruction on the efferent limb of the tracheal cannula.

*Experimental Bronchial Hypertonus from Histamin.*—When experimentally general bronchial hypertonus was produced by the use of histamin, there was great lowering of the barometric pressure in the pleural cavity during the entire respiratory circle, but in spite of it there was a very small respiratory excursion and the total volume of the lung was not increased. It was also found that a uniform hypertonus will not prolong the expiratory more than the inspiratory phase and will not produce emphysema.

*Regional Expiratory Dyspnea.*—A case is reported of a man who had an aneurysm of the latter portion of the ascending and the first portion of the transverse arch. When in an upright position this

patient had no difficulty but when recumbent he had decided evidence of stenosis of his left bronchus and during expiration it was much greater than during inspiration. He developed pulmonary emphysema on the left side only when recumbent. This suggested to the author that pulmonary emphysema may be traceable to an excess of expiratory obstruction over inspiratory obstruction; and that clinically we find a marked pulmonary emphysema attending the process because the expiratory is unequally distributed throughout the bronchial tree, whereas in the experiments failed to show any emphysema because the hypertonus was equally distributed.

R. BENNETT.

NEUWIRTH, I., AND KLEINER, I. S.: **The Blood-sugar Content of Capillary Blood as Compared with of Venous Blood.** *The Journal of Laboratory and Clinical Medicine*, May, 1922, vii, No. 8, p. 495.

A number of methods have in recent years been devoted to the determination of blood sugar in very small amounts of blood. Naturally the blood for a micro-determination is taken from the finger or the ear-lobe. This is of course capillary blood mixed with a small amount of tissue fluid.

In 20 individuals the capillary blood-sugar was found to closely parallel the venous blood-sugar. For clinical purposes the two values may be considered identical.

C. M. ANDERSON.

BARLOW, N., AND KRAMER, D.: **Selective Collapse Under Partial Pneumothorax.** *The American Review of Tuberculosis*, April, 1922, vi, No. 2, p. 75.

In their studies of partial pneumothorax, both artificial and spontaneous, the authors found that the amount of diseased tissue which is favorably affected by a partial pneumothorax is much greater than the actual volume of air which the pneumothorax contains. Fluoroscopic and x-ray plate studies have shown them that owing to the fact that expansibility is impaired by tuberculous or other disease of lung tissue to a greater degree than contractility, there is a



tendency even in uncollapsed lungs for a more or less atelectatic condition to develop in a tuberculous region. If a partial collapse of an entire lobe is permitted, with each breath there is slightly less expansion of the tuberculous portion, so that after a few hours or days it is seen that the diseased part has appropriated to itself the greater part of the collapse of the entire lobe, the healthy portions of the lobe expanding nearly or quite as well as before. If the pleural cavity is free, this results in the localization of the air in the pleural cavity over the site of the tuberculous process. That the localization is not due to gravity is demonstrated by the fact that it persists under the fluoroscope in whatever position the patient is placed. The pleural effusions occurring in artificial pneumothorax are in most instances caused by ruptures of lung tissue at or near adhesions of the pleura. Under the method the authors use, there is never sufficient stretching of the pleural adhesions to cause rupture unless there is actual caseation at the surface. Another advantage of the method is that when treatment is discontinued either for apparent arrest or any other reason, extreme stretching and tearing of recently formed adhesions are not brought about by the relatively slight re-expansion, and there is less liability to reactivation. The secret of success is unceasing watchfulness by physical examination, fluoroscopic, stereroentgenograms and manometer. In making punctures great care is necessary that visceral pleura be not punctured or torn. As these punctures or injuries are a frequent cause of pleural effusions. The technic is explained in great detail and is very illuminating. A few contraindications are mentioned. The most frequent being that of pleural adhesions which prevent free movement of air in pleural cavity. The others are: mental states which prevent proper cooperation on part of patient; tuberculosis in terminal stage; extensive involvement of both lungs in which healing is impossible; and severe tuberculous and other complications in other parts of the body which give hopeless prognosis.

C. A. SCHMID

LANE, SIR W. A.: **Chronic Intestinal Stasis.** *The Practitioner*, May, 1922.

The author thinks that many of the ills to which flesh is heir may be attributed to an abnormal delay in the passage of food through

the gastro-intestinal tract and the changes that result from this stagnation.

The local effect on the bowel from chronic intestinal stasis may be divided into two classes. In patients with considerable vitality this abnormal strain on the bowels leads to the formation of thick extensive fibrous bands, which contract and further distort the bowel as they become older. In patients with a minimum vitality these retaining bands are not formed, consequently the intestine becomes markedly dilated. In this type acute intoxication is the predominant feature, resulting largely from the activities of proteolytic putrefactive anaërobies.

As the result of absorption of these putrefactive substances the nature of which we are still in doubt, degenerative changes occur in the various organs and general metabolism is slowed.

In regards to treatment, the author claims great improvement following colestomy or a short circuit by means of an ileo-colostomy. Operation is most desirable in patients with an hypertrophied bowel wall.

Medically he restricts meat and gives paraffin with great advantage, 2 tablespoonfuls half an hour before meals twice daily. As an intestinal antiseptic he recommends a benzene derivative called dimol.

**O'KEEFE, E. S.: Relation of Faulty Cultures to Diphtheria Mortality.**

*The Boston Medical and Surgical Journal*, May 4, 1922, clxxxvi, No. 18, p. 603.

There seems to be a fairly general impression that a negative culture and true diphtheria are rare, if not incompatible. Kolmer states that 20 per cent of the primary cultures, as ordinarily taken, are negative in genuine diphtheria, whereas, subsequent cultures in these same cases are positive. Why should this be? These cultures are negative because a fair sample of the offending organism has not been obtained by the clinician for implantation on the culture material. The author's conclusions are:

One of the factors in delay of diagnosis of diphtheria is the failure to recognize that, unless cultures are properly taken, laboratory diagnosis will not be reliable. No amount of care or skill on the part of the bacteriologist can compensate for faulty technic on the part of



the practitioner in securing a fair sample of the organisms existing in the membrane or exudate concerned. Twenty-four to forty-eight hours' delay in the administration of antitoxin frequently results, owing to reliance placed upon faultily taken cultures.

M. M. BANOWITCH.

GOLDTHWAIT, J. E.: **A Case of General Progressive Muscular Atrophy, with Recovery.** *The Boston Medical and Surgical Journal*, April, 27, 1922. clxxxvi, No. 17, p. 559.

The case is reported partly because of its unusual result in the light of the general teaching, but chiefly because of the stimulus it should be to all who have to do with the care of the chronic conditions, no matter how hopeless they may commonly be considered. A man of 33 first seen in September, 1915 complained that eight months previously he began to notice that his legs were not of the usual strength, that he tired easily, and felt insecure on his feet. Two months later in trying to run he fell. At that time he could pick himself up but one month later he fell again but could not raise himself without help, and as soon as he was up his legs gave way and he fell again. The weakness steadily increased so that walking or standing was difficult. A weakness of the arms and hands began also to be noticed a condition which gradually increased so that he was unable to fasten the buttons of his clothes. Examination showed that the body was used in a very poor poise with the chest low, the abdominal wall was thin and relaxed so that the viscera were imperfectly supported and with an exaggeration of the lumbar curve of the spine. He was able to walk with difficulty with the thighs supported; was unable to rise from the chair except with use of his hands and arms. The muscles of the legs were much atrophied and no apparent paralysis was present. The reflexes were all diminished. No permanent contractures were present. Voluntary raising of the leg with the knee straight was impossible. The muscles of the arms and shoulders showed a similar condition only less advanced. The trunk and abdominal muscles were weak. Nothing was revealed in the general examination to indicate disease of the organs. The blood examination showed an almost total absence of sugar and creatinin, which was interesting because of the marked atrophy of the muscles

where sugar is naturally stored. Realizing that with the low, and therefore slightly moving diaphragm, the circulation of the abdominal viscera must be interfered with, since the blood is pumped back from the abdomen to the heart almost entirely by the contractions of the diaphragm acting upon the upwardly opening valves in the veins, correction of this seemed logically to be the first move. The patient was put to bed, all pillows were taken away so that the body could be kept perfectly straight with the chest raised, instead of the usual flexed position when the pillows are under the head and shoulders. In this position the diaphragm must necessarily be in the normal position, which is midway between full inspiration and expiration, in which, unless actual paralysis exists, the action will be adequate to insure the normal return flow of blood from the abdomen to the heart. To accentuate this several half-hour periods were used with the patient in the so-called "hyper extended" position, with a moderate sized pillow under the dorsal spine, with the arms raised and the hands clasped under the head. When analyzed this is the position taken in yawning, which is of course a reflex effort to relieve abdominal distress. Stimulating baths were given to help the physiology through the stimulation of the superficial sympathetic nervous system. For the same reason light massage was given especially of the muscles of the back and loin. Small doses of adrenalin and pituitary extract were given with the hope of improving his general vitality, but before this was started, while the examinations were being made and only physiotherapy and the special postures were used, marked improvement showed. In two weeks' time the color had improved and the muscles were in better tone. In three weeks the patient could raise the straight leg from the bed, and at this time he was fitted to a brace which held the body erect and prevented flexion at the waist line, with the necessary lowering of the diaphragm. With this brace on he was allowed up for short periods and exercises were started to stimulate development of the muscles of the trunk and chest. During the rest of the time he was kept in the horizontal position, and to prevent the common bending at the waist line (dorso-lumbar level) in the movements made in bed, a plaster of Paris jacket was made and worn except when removed for bathing and exercise or when he was up with the brace. The patient was in the hospital 7 weeks and on leaving the hospital made daily visits to the office gymnasium. At the end of 8 weeks not only was the



functional condition markedly better, but the examination of the blood showed normal sugar and creatinin. When last seen in 1919 the patient was equal to all that should be expected of an active man. He is regularly at work and from a letter received within a month his condition is apparently as good as when he was last examined.

M. M. BANOWITCH.

JANKELSON, I. R.: **Chronic Fermentative Intestinal Indigestion.** The *Boston Medical and Surgical Journal*, May 4, 1922, clxxxvi, No. 18, p. 597.

Chronic fermentative intestinal indigestion is a definite entity with well defined course and symptomatology. We are justified in considering fermentative intestinal indigestion as a mild colitis with involvement of the near-by ileum. It must be looked upon as a symptom complex of colonic disease associated with hypermotility of the entire intestinal tract and an increased susceptibility of the intestines to the products of fermentation. The fermentation occurs as a result of bacterial action. The patient's chief complaint is usually persistent diarrhea. The stool is pasty, of light color and sour smell. He may complain of heaviness in the mesogastrium and rumbling meteorism. Occasionally heartburn, palpitation of the heart, and pressure sense in the epigastrium are present. Colicky pains relieved by bowel movement are present at times. Later, well pronounced neurasthenia develops. Physically the abdomen is usually distended and slightly tender on deep pressure, and often gurgling is heard. Examination of the feces gives the pathognomonic signs of the disease. The stool is light in color, pasty to watery in consistence and of sour odor, and acid to litmus. The most characteristic picture is seen under the microscope which shows large amounts of undigested vegetable matter and many microorganisms. The *clostridium butyricum* occurs in large numbers. The appearance of a large quantity of free starch and *clostridium butyricum* is diagnostic. The Schmidt fermentation test shows excessive fermentation. Treatment is largely dietetic with elimination of carbohydrates; milk and all foods containing cellulose are prohibited. Later carbohydrates are gradually added. As to drug therapy, belladonna is the drug par excellence.

M. M. BANOWITCH.

ORMSBY, O. B.: **Report of a Case of Lysol Poisoning.** *Illinois Medical Journal*, May, 1922, xli, No. 5, p. 371.

The author cites the case of a man who swallowed about two ounces of lysol. The patient was found to be delirious, so that he had to be restrained; was cyanotic, secreted a great deal of mucus and the respirations were so embarrassed that his jaw had to be kept open so that he could get air. The stomach was washed many times with a weak solution of sodium bicarbonate then two ounces of alcohol (the chemical antidote of lysol) poured through the tube. This was later washed out and a one-half pint of milk was allowed to remain in the stomach. The next day the patient was rational. Several hours afterwards he voided jet-black urine which persisted for two days. Bronchial secretion continued so that about one pint of mucus in each 6 hours was passed. This was later blood streaked. The day following onset of illness the temperature was 103° F. This continued for three days and its cause could not be determined. The treatment in the meantime consisted of large doses of bismuth subnitrate with an equal amount of calcined magnesia and small doses of morphin and acetanilid. At no time did the heart show signs of failure. Patient was well in eight days. The importance of washing out the stomach and using alcohol is emphasized.

G. LORDI.

LARSEN, N. P., PADDOCK, R., ALEXANDER, H. L.: **Bronchial Asthma and Clinical and Immunological Observations. Allied Conditions.** *The Journal of Immunology*, March, 1922. vii, No. 2, p. 81.

Eight patients were distinctly improved and there was no change in three out of eleven asthma patients treated with autogenous vaccine. Two virulent strains of a staphylococcus pyogenes aureus vaccine were used, and it was found that apparent clinical improvement continued regardless of the nature of the organism predominant in the sputum of the patient. In order to see whether this effect was merely one of a non-specific protein, a typical paratyphoid stock mixture was next given. Although slight improvement was noted in 6 out of 13 patients treated, 2 who had been doing well under the former regimen became distinctly worse. No improvement was noted in the



remaining 4. After six weeks of this treatment, 17 cases were treated with a stock staphylococcus pyogenes aureus vaccine. Ten improved, 1 was questionable, and 6 had no improvement. At the outset the dose of staphylococcus pyogenes aureus used was 100,000,000, and the increment was never larger than the original dose. This method gave the best results. Two interesting observations were made. This dose would frequently cause improvement for but three or four days and was more efficacious when given twice a week. Likewise when the doses were increased too rapidly relapses would frequently occur. In some cases in which improvement was not recorded, the asthmatic paroxysm would disappear but the cough became worse. There seems to be not much difference in the effect of the various types of vaccine used except that in no instance when typhoid vaccine was used was there so much improvement as when the other organisms were used. Vaccines are worth trying in asthmatics associated with signs of bronchial infection, but must be cautiously given. In some cases, after all other methods failed, improvement began immediately after vaccine therapy was instituted. In others the results were completely disappointing. It is not known exactly how these agents act.

W. LINTZ.

BERLIN, W. C. K.: *Pyelitis: Etiology and Pathology with Especial Reference to Internal Therapy*. *Medical Record*, April 8, 1922, ci, No. 14, p. 575.

Anatomical and postural environments of the kidneys in man are no doubt, the principal predisposing factors in the occurrence of infections of the kidney pelvis. The pelvis base being larger, narrows down to the outlet at its junction with the ureters, forming a funnel-shaped cavity. The postural environment of the kidneys is the second and most important factor in the predisposing cause of pyelitis. The postural factor consists in the fact that the long axis of the kidney is parallel or perpendicular in the erect position to the long axis of the body. Drainage, therefore, is not free if the body be maintained continuously in the erect position.

It is doubtful, however, if infection of the kidneys could occur without an exciting cause and one which may be of a specific nature,

that is, bacterial selective action in setting up inflammation of the kidney pelvis. The immediate exciting etiological factor in the occurrence of pyelitis, preceded by a bacteremia, is no doubt from a focal area of infection such as may follow general or local intestinal stasis causing faulty digestion with fermentative changes encouraging the growth and multiplication of the intestinal bacterial flora, or the focus may be a cholecystitis, gastric or intestinal ulcers, appendicitis, prostatitis, pyosalpingitis, or one of the teeth, tonsils and sinuses. More rarely ureteral strictures or ascending infections from the urinary bladder may be classed as the exciting causes.

*Treatment.*—The first essential is to locate and remove, if possible, the exciting cause. The next step is to treat the resulting bacteremia and pelvic infection. Intravenous application of remedial substances have been inaugurated for this purpose. The following preparations are used: (1) Hexamethylenamine in 20 c. c. ampoules containing 20 grains (1.300 grams); and (2) a 20 c. c. ampoule containing sodium iodid, 28 grains (1.82 grams); creosote and guaiacol, grain 1/8 (0.0081 gram), in slightly alkaline normal saline.

R. BENNETT.

TAYLOR, J. Z.: *A Successful Treatment of Pulmonary Tuberculosis in the First and Second Stages.* *Medical Record*, April 15, 1922, ci, No. 15, p. 622.

The author has used for years a tablet made up as follows:

Rx

Red iodid of mercury .....	1-250 grain	(.00026 gram)
Manganese iodid .....	1-8 grain	(0.00810 gram)
Sodium cinamate .....	1-12 grain	(0.00540 gram)
Copper phosphate .....	1-24 grain	(0.00270 gram)
Sodium formate .....	1 grain	(0.065 gram)
Arsenious acid .....	1-60 grain	(0.00108 gram)
Strychnin hypophosphite .....	1-128 grain	(.0005 gram)
Iodized calcium .....	1 grain	(0.065 gram)
Oil of cinnamon .....	1-20 minim	(0.003 c. c.)
Charcoal .....	1 minim	(0.06 c. c.)

M. to make one tablet.

*Dose.*—One tablet to be taken half an hour after each meal, for fifteen days at a time; then rest for five days, and follow by another fifteen days of treatment, and so on alternately. The treatment may be kept up from two to twelve months.

Every day give a tablet or capsule of iodized lime (containing lime, iodine, and starch), grain 2 (0.130 grams), creosote minims 4, guaiacol carbonate minims 2 t. i. d. and at the same time quinin 2 grains (0.130 grams). As soon as the stomach can tolerate it increase



the dose of the iodized lime, creosote and guaiacol to 2 or 3 capsules a dose, and quinine to 6 to 10 grains (0.400 to 0.650 grams) a day.

*Sun and Shade.*—One hour before sunrise and two hours after sunrise out-of-doors are worth more to consumptives than the balance of the day. Live out in the open.

*Diet.*—If milk is relished take from one to three quarts a day. Clabber, curd, buttermilk, codliver oil, sliced onion sandwiches, and all foods containing vitamins in particular are to be used. Warm or tepid baths should be taken in the morning on an empty stomach.

*Inhalant.*—Take a small lump of unslaked lime and pour a little water over it, and as it slakes breathe deep in to the lungs, night and morning.

Vaccine injections are given every third or fourth day. The non-virulent tubercle vaccine may be given, combining every second injection with catarrhal vaccine. The tubercle vaccine is given in doses of 1 minim, increased one minim at a time, not to exceed 15 minims. The catarrhal vaccine is given in 5 minim doses increased 5 minims each time up to 15 minims.

R. BENNETT.

CLARK, L. P.: **Re-educational Treatment of Confirmed Stammerers.**  
*Medical Record*, April 15, 1922, ci, No. 15, p. 609.

The two points which the author wishes to make in this article are: (1) that in the more enduring types of stammering the essential fault lies deep in the character formation of which the stammering is but one of the symptoms, often the lesser; and (2) the manner of treating these types successfully includes painstaking, consistent analysis and synthesis of the personality as well as proper systems of speech gymnastics. To do this a psychiatric training is essential for the teacher's equipment.

It would seem that confirmed stammering should be ranked as a syndrome of the effective life of self-expression. Nothing less than a thorough neuropsychiatric training treatment will permanently relieve it.

There is a basic fault preceding the stammering. In the main it is summated in a shyness and timidity toward all forms of self-expression. The feeling of inferiority soon engendered in the stammer-

er is accentuated by the active or passive resistance which he exercises toward the great nucleus of authority, the father. The removal of the maladaptive wrappings of habit and manner which the stammerer's personality possesses is the real purpose in analysis and treatment. Viewed in this light of origin there can be little wonder that the confirmed stammerer must first be taught to shed and then to make the proper social and self-expression consonant with his innate desires and station in life. He has to unlearn and relearn anew. The amount of sympathetic tact and inculcation of habits of broadly constructive effort which the trainer must exercise can hardly be overestimated. The warm, friendly attitude toward the trainer which is necessary on the part of the patient is usually little in evidence, and to make it more operative for reëducation it must be continually heightened by a rather intense sympathetic interest in the stammerer's earlier conflicts.

The inherent defect of the confirmed stammerer is due to an arrest of the whole instinct of self-expression and this personality defect is often summated or most marked in a later development of a disorder of speech. This being the case, the removal of the latter as well as cognate personality defects is best brought about by intensive and thorough-going special speech gymnastics but more particularly by analysis and reëducation of the personality defect as a whole.

R. BENNETT.

PRENTISS, E. C.: **Secretin, A Defensive Factor Against Gastro-intestinal Cancer.** *Medical Record*, April 1, 1922, ci, No. 13, p. 542.

Ulcers of the stomach and duodenum are frequent. The duodenal ulcer is probably more frequent than the stomach ulcer, but cancer of the stomach is much more frequent than cancer of the duodenum.

The author is of the opinion therefore that there is some substance present in the duodenal epithelium not present in the stomach epithelium, which prevents the conversion of duodenal ulcer into cancer.

The most probable substance present in the duodenal epithelium and not in the stomach epithelium is secretin. Secretin is present



in the gastro-intestinal tract where cancer is less frequent and absent where it is most frequent.

A secretin preparation can be used and should be given a trial in these cases.

R. BENNETT.

PAULLIN, J. E., AND SAULS, H. C.: **A Study of the Glucose Tolerance Test in the Obese.** *Southern Medical Journal*, April, 1922, xv, No. 4, p. 249.

Following the ingestion of glucose the normal individual responds in a more or less typical manner. Within a half hour after ingestion there is an alimentary hyperglycemia seldom reaching more than 0.17 per cent, and returning within two or at most three hours to the normal point of 0.07 to 0.110. Associated with this hyperglycemia there is seldom a glycosuria. The abnormal response is evidenced by a greater increase in the percentage of blood sugar and a longer time in returning to normal, and more frequently associated with a definite glycosuria. An abnormally high and prolonged high hyperglycemia does not always mean that an individual has diabetes; yet it is excellent evidence that there is an interference with the normal carbohydrate metabolism which is of sufficient seriousness to demand proper remedial measures.

With this idea in mind the authors selected 26 cases all showing from 10 to 80 per cent overweight, and who were not suffering from other conditions which might influence carbohydrate tolerance. After a night's fast the patient was given 100 grams (230 grains) of glucose in 300 c. c. of water plus the juice of one lemon, and one hour later 200 c. c. of water. Blood was obtained by venipuncture before the administration of the glucose and every half hour afterwards for two hours, and at the same time specimens of urine were obtained. Of the 26 cases of the overweight patients 15 gave an abnormal response to the ingestion of the glucose, and 9 of these 15 were between 20 and 30 per cent overweight, and the authors believe that 6 of the 9 are early diabetics.

In Joslin's statistical study of 1,000 cases of diabetes, 734 were overweight at or prior to the onset of the disease, and almost 50 per cent of this number were from 11 to 30 per cent overweight.

G. DISTLER.

STOCKTON, C. G.: **Gastro-intestinal Infection in Relation to Infection of the Liver and Bile Passages.** *The American Journal of the Medical Sciences*, April, 1922, clxiii, No. 4, p. 485.

A case is reported of a patient having suffered principally from gastritis and failing gastric function, and three years later from enteritis. There was no jaundice preceding the last eight months of life. At autopsy the liver had shrunk to two thirds its normal volume. On incision there were found countless areas of necrosis, containing debris. It presented minute areas of hepatitis, in which the biliary passages escaped, except at their origin. It might seem that the process had begun in the liver, and that the biles had led to infection of the intestinal tract. This does not correspond with the history, but the author believes that the disease was principally a gastritis, later an intense duodenitis; that there was a blocking of the papilla from swelling of the duodenal mucosa, which caused the first attack of jaundice. Meantime infection was carried to the liver through the portal system, and thus caused a hepatitis with a descending inflammation. This is emphasized for the reason that this case seems to illustrate the growing belief that jaundice is more often the result of an infective or toxic hepatitis with the infection descending, than an ascending infection (via portal system to the liver). The beneficial results are shown, from the transfusion of normal duodenal contents of a healthy donor into the functionless duodenum of a patient, also the value of intestinal perfusion. Meltzer's method of stimulating bile flow is compared to Lyon's method of treatment.

A. T. MAYS.

NEW, G. B., AND FIGI, F. A.: **Actinomycosis of the Tongue.** *The American Journal of the Medical Sciences*, April, 1922, clxiii, No. 4, p. 507.

Thirty-five cases of primary actinomycosis of the tongue are recorded with three additional cases of the authors'. Twenty-seven were males, 10 females and in 1 the sex is not given. All were over twenty years except one, a young man of 18. The disease is not necessarily occupational but is common in farmers and in persons whose rural life exposes them to infection. It is of interest to note



that a judge, one of the authors' cases, was infected from chewing grass while playing golf. The infection appears as a single isolated nodule, usually near the tip of the tongue, and is unilateral. The size varies from 1 cm. to 1.5 cm. in diameter. A satisfactory diagnosis is best obtained by finding a few characteristic granules, microscopically, from the excised entire nodule. Only one death is reported, resulting from multiple neck abscesses. Best results are obtained by combined medical and surgical treatment; wide excision with primary suture of the wound, and packed with iodine or iodoform gauze. Large doses of potassium iodide and the use of radium give unquestionably distinct benefit.

A. T. Mays.

BERNHEIM, B. M.: Impending and Real Gangrene Associated with Diabetes. Correlation of Medical and Surgical Effort. *The American Journal of the Medical Sciences*, May, 1922, clxiii, No. 5, p. 625.

Various cases are given in detail to illustrate what may be accomplished by closely allied medical and surgical forces when arrayed against a really dangerous condition. Physicians tend to handle the surgical complications of diabetes too much by themselves, thereby frequently losing the opportunity for constructive measures. On the other hand, the surgeon is too prone to disregard the medical phase of the situation in his efforts to overcome the surgical complaint. A plea is made for intelligent co-ordination of effort from the very start.

A. T. Mays.

ROBIN, A.: Silica, Calcium and Magnesium in Cancerous Tissue (Lasilice, la chaux et la magnésie dans la tissu cancerens). *Bulletin de la Academie de Medicine*, 1922, lxxxvii, 128-132.

The author has previously shown that cancerous tissue is supermineralized with certain elements, chlorine, sodium and potassium, while it is demineralized in lime and iron. He has classified the elements as follows: (1) Agents of construction, chlorine, sodium and potassium; (2) agents of defense, silica, lime, magnesium, phos-

phorus iron. It then seemed interesting to see if the mineral principles considered as elements of defense could be fixed from medicaments by the cancerous tissues. The work on silica, lime and magnesia has been carried on with three cancerous patients; the first aged fifty years, was affected with cancer of the right angle of the colon; the second, fort-five years of age, with cancer of the esophagus; the third, sixty-five years old, with primitive cancer of the liver. All three underwent the following treatment: (1) A tablet of glycerophosphate of lime, 50 centigrams (7.715 grains), on awakening, (2) before breakfast and dinner, 1 gram of magnesium hydrate, mixed with a little water, (3) in between these meals, 1 gram of the following mixture in 1 tablet:

Sodium silicate

Potassium silicate ..... aa 5 grams

Magnesium silicate ..... 10 grams

Divided into 20 tablets

The first patient followed the treatment for four months with a short period of interruption; the second for three months; the third for two months. They all succumbed. At autopsy the tumors were removed, and the silica, lime and magnesia estimated. The cancerous tissues had fixed the silica, lime and magnesia, as shown by the averages of percentage increase of these mineral elements in the patients treated:

	<i>Silica</i> <i>p. 100</i>	<i>Lime</i> <i>p. 100</i>	<i>Magnesia</i> <i>p. 100</i>
Real increase .....	58	34	6
Increase in comparison with total nitrogen .....	63	42	18

The fixation of the silica has been most active, then lime and then magnesia. It may be remarked that it is in the subject treated for the longest time that the highest fixation of silica is realized, while the contrary is true for lime, and the magnesia has varied less noticeably. One may then conclude that the capacity for fixation of lime and magnesia in cancerous tissue rapidly reaches its limit and that with too long a prolongation of treatment, this tissue loses a part of the magnesia and especially of the lime, which loss might be avoided by



administering these agents alternately. As to silica it is the essential principle of the mineral content of the connective tissue which appears the more rigid as it is richer in silica, and the hypergenesis of which constitutes one of the elements of spontaneous organic defense against cancer. But the fibrous framework of these three tumors was well developed. We do not know through what processes lime and magnesia contribute to the organic defense against cancer. We only know that, on the one hand, in retrogressive cancer, the lime content is raised to great proportions, and on the other hand, that in slowly progressive cancer of the liver magnesia accumulates in the regions not yet attacked; which permits the formation of the hypothesis that it is to their charge of magnesia that these regions owe their resistance to cancerous invasion. But according to what is known of the biological rôle of silica, it is right to establish a correlation between its increase and the connective tissue hypergenesis which accompanies its fixation in excess, which justifies the use of this medicinal agent for the purpose of furnishing the material necessary for one of the acts of spontaneous defense of the organism against the cancerous process.

**BERNHEIM, B. M.: Pain in Threatened and Real Gangrene of the Extremities: Its Relief.** *American Journal of the Medical Sciences*, April, 1922, clxiii, No. 4, No. 601, p. 517.

The underlying condition of threatened gangrene is diminished blood supply, and is early manifested by numbness, tingling of toes and feet, blanching, cold sensations and intermittent pain. Rest, with simple sedatives, is given in the acute stage. Later, a so-called blood-vessel exercise is begun. This is accomplished by an alternate hot and cold plunge up to the knees, three times a day. After drying, the feet and extremities are well oiled. Between these baths an electric vibrator is used over the entire leg and foot for five or ten minutes. More oil is then applied. This lubrication is extremely important, as it prevents scratches, abrasions, and thus infections and ulcerations. In addition to these measures, Ringer's solution is given by means of a duodenal tube, or by mouth if the patient objects to the former method. It caused a curious alleviation of pain, probably by lowering the viscosity of the blood. No success has ever

been accomplished by baking. Ulcerations are cared for by aseptic methods, and all efforts to improve the blood-supply. Wet boric acid or salt solution compresses are used. Occasionally boric or mild ointment is applied. Constricting bandages, both above and below the knees are applied, and suddenly relaxed by cutting. This causes a reaction in the flow of blood, and helps to dilate the collapsed blood-vessels, thus improving the circulation.

A. T. MAYS.

**HARNED, C. W.: Focal Infection of the Mouth, Teeth, Tonsils and Maxillary Bones in Relation to Systemic Disease.** *Journal of Iowa State Medical Society*, 1922, xii, No. 1, p. 10.

Ever since the establishment of the germ therapy and the work done by Lister and Pasteur over 50 years ago, medical science has tried to arrive at a more clear knowledge of germ and bacteria life. The subject of focal infection, especially as related to the tonsils, teeth and maxillary bones, has been extensively investigated and exaggerated for the last few years. Many of the compiled data are misleading. The teeth, tonsils, accessory and nasal sinuses, and maxillary bones are likely to be the seat of focal infection because of their situation at the entrance of the respiratory and digestive symptoms, and on account of the anatomical construction. They may readily collect and foster the growth of pathogenic germs. Miller, 30 years ago, gave the first scientific discussion on the topic. His conclusions were that the greatest harm came from the ingestion of the poisonous excretions that were the product and inflamed and suppurating tissue, as in pyorrhea, from abscesses discharging into the mouth, and also from decayed teeth. Later the absorption of toxins and germs into the blood stream and circulation has been proven to be much more productive of systemic infection than the simple ingestion of pus. It is quite probable that the greater part becomes digestive and proves harmless. During the last 20 years, perhaps teeth and tonsillar tissue have been removed too often for the treatment of refractory cases of neuritis, rheumatism, kidney and digestive derangements. The medical and dental profession has recently arrived at a more conservative stand. The author is firmly convinced that septic foci do exist in or around the tonsils, teeth and



tissues of the mouth and maxillary bones, and that at times they do cause systemic infection. He doubts, however, that they are the primary etiological factor in a great majority of cases. Many of the reports are compiled upon a special group of pathological cases. The authors would remove the tonsils and all pulpless teeth in every case of neuritis, rheumatism, and systemic infection of obscure origin. He even doubts that it is desirable to remove all sources of systemic infection if it were possible. Pathogenic germs are present on every hand, and it is necessary to develop certain antibodies and to establish immunities in order to combat and overcome repeated infections. If this method of natural vaccination is necessary, the lymphoid tissue of the pharynx seems to be the most desirable and suitable point. The patient presents himself to the physician, when the natural defenses of the body are overcome with an excessive dose of disease-producing germs, or by errors in the diet, lowering the resistance towards the germs. The majority of instances have made up the statistics taken from these patients. If we are presented with a group of cases suffering with iritis, neuritis, rheumatism, appendicitis, gall-bladder inflammation, kidney and heart complications, an examination shows pyorrhea, blind abscesses, pulpless teeth or hypertrophied tonsil. It is natural to look upon them as the cause, but the evidence is not at all conclusive. Many people have pulpless teeth without the slightest evidence of systemic disease or infection. Gilmer, Talbot, and others, have long contended that a great majority of blind alveolar abscesses are of hematogenous origin. There are many people who have iritis, neuritis, rheumatism, heart and kidney disease in whom no oral foci of infection are demonstrable. Gilmer, Talbot, and others, have long contended that a great major-gation to distinguish among the various results and findings. There are sufficient means of determining if an area of chronic infection exists in the maxillary bones, but the findings should not stampede any physician in the right surgical procedures.

MORRISON, J. R.: **Blood Transfusion in Medical Diseases.** *Kentucky Medical Journal*, 1922, xx, 174.

The most important indication for transfusion is traumatic hemorrhage, but is strictly a surgical measure and is not discussed in this paper.

Acute and subacute hemorrhage in gastric and duodenal ulcers, and those intestinal hemorrhages in typhoid fever are strictly medical, and should be treated by the medical man. The records show that very few die from the immediate result of gastro-intestinal hemorrhage, because the blood-pressure is lowered, and in other ways nature cuts down severe hemorrhage. But in slowly oozing cases with declining strength, transfusion is indicated.

A case is cited of a patient in a state of collapse from a hemorrhage from intestinal ulcer; his pulse was weak and rapid, blood-pressure 75, and death seemed near. He was given 500 c. c. of citrated blood; revived and later was treated surgically for his ulcer.

As for typhoid intestinal hemorrhage, he refers to a case of prolonged typhoid with prolonged oozing with greatly reduced vitality, in which he felt sure that, had everything been favorable, transfusion would have saved the patient a long nerve-racking convalescence.

Definite effects of blood transfusion are: (1) Restoration of the bulk of the blood; (2) provision of oxygen and food for tissues; (3) increase of coagulability; (4) stimulation of the hematopoietic organs; (5) increase of resistance to infection by its antitoxic and bactericidal properties.

Blood transfusion has brought excellent results in bleeding in the new-born; in purpura, hemophilia and jaundice. Sera also relieves bleeding in the above conditions, and is given a trial first. In pernicious anemia it has not been of much avail, except for its mental effect; in malignancy it also is of little avail. He gives two cases of septicemia in which transfusion was of benefit of a temporary character only.

Blood transfusion offers a remedy of much value in many medical diseases if it is used in the proper fashion and at the right time.

**SALIS, H. V.: The Treatment of Contracted Flat Foot During Sleep** (Die Behandlung des kontrakten Plattfusses im Schlafe). *Zentralblatt für Chirurgie*, 1922, xlix, 46.

In contracted flat foot the reflex pronation contraction relaxes during sleep. Hubscher (*Zentralbl. f. Chir.*, 1908, No. 42) showed that treatment would be successful that would reduce the contraction during sleep. He devised an apparatus, similar to the valgus dress-



ing of Finck's, using it the other way round, causing supination. The foot was supinated and pronated actively in the morning. The results were striking. The patients were not allowed to stand. A case was made for the Lange collodion support. The shoes worn by the patient during the day were supplied with cork wedges.

The author has accepted this method, and discarded others, such as general narkosis and casts of plaster Paris in supination; local narkosis and cocainization of the talonavicular joint, according to Lorenz; Gibney's adhesive plaster cast; tetonomia of the perinosi, etc. Hubscher made an indication that feet which were not supinated the next day were not altogether contractile, but that formation of adhesions had set in.

To this method of Hubscher's the author has added a device, in order to avoid recurrence. It is a fiber sole which is attached to an outer splint by a ball joint steel spring bands which hold it beneath the knee. In front and in the back of the sole rubber bands extend to the steel spring band beneath the knee. They are attached by hooks. Supination is effected by adjusting the hooks. The steel band spans the legs in the back, but does not extend all the way around the leg. It is kept from slipping down by the calf.

Diagram is contained in the article.

## SECTION ON LABORATORY AND RESEARCH

BROWN, A.: **Studies in Specific Hypersensitiveness. I. The Diagnostic Cutaneous Reaction in Allergy. Comparison of Intradermal Method (Cooke) and Scratch Method (Schloss).** *The Journal of Immunology*, March, 1922, vii, No. 2, p. 97.

Brown describes the two prevailing methods of applying the skin tests in allergic conditions; the cutaneous or scratch method of Schloss and the intradermal or injection method of Cooke. He used two forms of protein extract. (1) The dry powdered preparation made according to the method described by Wodehouse, which consists of extracting the material with water, and the extract dried with the use of an electric fan, until it becomes syrupy in consistency. To this fluid are added three to four volumes 95 per cent alcohol and the resultant precipitate is washed with alcohol 95 per cent absolute alcohol and ether; and (2) the fluid preparation originally used by Cooke and made now according to the method described by Coca (vide subsequent article).

In 78 tests performed the author believes that the intradermal method is superior to the scratch method for the following reasons: (1) In every case known to be clinically sensitive to a protein, the intradermal test with that protein resulted positively. The scratch test with the corresponding dry preparations resulted positively in only half of the cases tested. The scratch test with the fluid preparations resulted negatively in 18 per cent of the cases tested; (2) the intradermal method when properly applied is less painful than the scratch method and the resulting skin markings do not persist so long as the scratch method; (3) less time is required for applying the intradermal method and for obtaining the results than is needed for the scratch method; and (4) the same preparation can be used for test-



ing and for treatment when the fluid preparations are employed. The author does not state whether he obtained by the intradermic method, positive results in negative cases, i. e., a definite reaction in patients who were not allergic to the particular protein tested.

W. LINTZ.

VANDER, V. A., JR.: Studies in Specific Hypersensitiveness. II. A Comparison of Various Pollen Extracts with Reference to the Question of Their Therapeutic Value in Hay Fever. *The Journal of Immunology*, March, 1922, vii, No. 2, p. 113.

Since there is no standardized method of preparing the various commercial extracts used in the treatment of hay fever, the author made a study of the various strengths of these extracts to see what therapeutic results might reasonably be expected from their use. Preparations of the four of the best known commercial products were purchased from a pharmacy and compared with corresponding extracts prepared after the method of Dr. A. F. Coca (vide subsequent article). All five preparations were in fluid form. Eighteen cases in all were used for these experiments. The author found that no commercial preparation even approximated the strength of Dr. Coca's preparation. As it has been his experience that even the most sensitive cases (with very few exceptions) require for therapeutic effect a maximum dose of pollen extract, containing at least 0.025 to 0.05 mg. of nitrogen, while the less sensitive may need as high as 0.1 or 0.2 mg. of active pollen nitrogen, it is difficult to see how a good result can be expected with the use of these comparatively weak commercial preparations except in the very sensitive cases, which constitute a relatively small percentage of the total. To obtain a full measure of relief stronger extracts should be used; however, if this is done, more caution must be exercised in their use as the more concentrated extracts are more apt to cause constitutional reactions, which in inexperienced hands can be dangerous. He also found that patients vary markedly in their degree of hypersensitiveness and also in the size of the dose necessary to relieve their symptoms.

W. LINTZ.

COOKE, R. A.: **Studies in Specific Hypersensitiveness. III. On Constitutional Reactions: The Dangers of the Diagnostic Cutaneous Test and Therapeutic Injection of Allergens.** *The Journal of Immunology*, March, 1922, vii, No. 2, p. 119.

Dr. Cooke, designates as constitutional or general reactions the group of symptoms occurring in allergic individuals after the absorption of an allergen and its transportation by the blood or lymph into the general circulation. Symptoms occur in various organs and tissues affected by the allergen may be protean in nature, since they depend upon the structures involved, which may differ with the individual and allergen concerned. Such reactions may occur irrespective of the method used in the introduction of the allergen, i. e., after test, injection, or ingestion. The data for this paper consists of 578 cases which have been studied statistically and the general impression gained from 4,000 cases. The author thinks that maybe constitutional reactions occur more frequently after the intradermal than after the scratch test. The usual allergic symptoms noted, were coryza, asthma, urticaria, erythema, pruritis, edema and cough. The infrequent symptoms were glandular enlargement, headache, fever; nausea, diarrhea, acute abdominal pain, dysmenorrhea, syncope, cardiac collapse.

When constitutional symptoms occur within one hour after the allergen is introduced it is called an immediate reaction, after an hour it is called a delayed reaction. The sooner the symptoms begin the greater their intensity and the greater the danger of a fatal result. A thorough knowledge of the treatment of these reactions should be had by every one attempting this work. One must quickly recognize the beginning of such a reaction by an extensive urticarial wheal at the site of inoculation, a beginning erythema, a short cough or dyspnea. Place a tourniquet tightly about the arm, above the site of inoculation with allergen. Subcutaneous injection of adrenalin, 1 c. c. of 1:1000, in children 0.4 to 0.6 c. c. use at once intravenously if reaction is severe. Repeat dose in two to five minutes if symptoms continue to increase. When cardiac dilatation occurs give strophanthin, 1 mg. intravenously. When attack is controlled and has passed its peak of severity, morphin in proper doses may be used. The author has never seen atropin do any good in these cases,



on the other hand, adrenalin, if it is used often enough and in large enough doses, will avoid the serious results of a reaction.

W. LINTZ.

COOKE, R. A.: Studies in Specific Hypersensitiveness. IV. New Etiologic Factors in Bronchial Asthma. *Journal of Immunology*, March, 1922, vii, No. 2, p. 147.

The group of substances absorbed by inhalation play a much more important part as specific causative factors of asthma than is generally supposed. The various substances found to be of diagnostic importance in 327 investigated cases are given. In 33 per cent of the entire group, dust extract played an important rôle. The diagnosis made in accordance with this idea may be made with a great degree of assurance on account of the fact that they are based on positive findings and not on negative findings, as are the cases with so-called bacterial asthma, which Dr. Cooke insists are to be more properly considered as undiagnosed cases. The new procedure of testing dust extract allergy has yielded valuable information in that it permits the study of the occupational or domiciliary environment of an asthmatic patient and establishes a positive diagnosis in certain cases not obtainable by any other means. It has furthermore shown the presence of a substance in most house dust, which in itself is an important factor in the etiology and maintenance of asthma. The nature and source of this substance is as yet unknown. The dust of hay may act as a specific allergen and must not be considered as a mere mechanical irritant.

W. LINTZ.

COCA, A. F.: Studies in Specific Hypersensitiveness. V. The Preparation of Fluid Extracts and Solutions for Use in the Diagnosis and Treatment of the Allergies with Notes on the Collections of Pollens. *The Journal of Immunology*, March, 1922, vii, No. 2, p. 163.

The present preparations on the market, used for the diagnosis and treatment of specific allergic phenomena are prepared in a haphazard manner and are in many instances insufficient and unreliable.

After experimentation the following composition of the extracting fluid was adopted: Sodium chlorid 0.5 per cent, sodium bicarbonate,  $\text{NaHCO}_3$ , in such concentration that 10 c. c. of the final fluid equalled about 3 c. c. of N/10 alkali, and carbolic acid in final concentration of 0.4 per cent.

The solution was made without the use of heat and with the avoidance of excessive shaking. When it was desired to dilute an extract, or other preparations with this fluid after the original extract has been sterilized, the diluting fluid itself was sterilized by filtration through a sterile Berkfeld filter. He uses the above fluid for all dry materials such as cereals, danders, nuts, and the pollens and for certain vegetables which contain little juice, such as sweet potatoes, fresh beans and peas, and for the meats. When the material contains considerable fluid, such as fruit and most of the vegetables it is advantageous to use preserving fluid containing 2.5 per cent Na Cl 1.25 per cent  $\text{NaHCO}_3$ , and 2 per cent carbolic. The extraction of dry material is made at room temperature for 2 to 3 days. Deterioration experiments were performed with pollen extracts and the results arrived at were that they deteriorate somewhat in nine months if they are kept in the ice box and that this deterioration is considerably greater if the extracts are kept at room temperature. The author relates in detail how to extract certain allergens. The article is difficult to give fairly in an abstract and those interested should read the whole article.

*Collection of Pollens.*—Two principal requirements should be met: (1) To obtain the pollen as free as possible from other material, dust from the soil and from other parts of the plant; and (2) all moisture must be eliminated from the collected pollens before it is stored. The method is described in detail.

W. LINTZ.

SPAIN, W. C.: *Studies in Specific Hypersensitiveness. VI. Dermatitis Venenata.* *The Journal of Immunology*, March, 1922, vii, No. 2, p. 179.

By means of an alcoholic or chloroform extract of the fresh leaves of *Toxicodendron radicans*, applied to the surface of the skin, the typical vesicular lesion of *Dermatitis venenata* can be produced. The



typical vesicular lesion of *Dermatitis venenata* could not be produced by the intradermal injection of an active alcoholic extract. The lesion thus produced was not different from that caused by the intradermal injection of the solvent. With the patch test (the application of the alcoholic or chloroform extract to the surface of the skin) differences can be demonstrated in the susceptibility of different individuals to poison ivy, and in the incubation period of the lesion. With the technic used infants under 18 months could not be shown to be susceptible.

W. LINTZ.

COCA, A. F.: Studies in Hypersensitiveness. VII. The Age Incidence of Serum Disease and of Dermatitis Venenata, as Compared with that of the Natural Allergies. *The Journal of Immunology*, March, 1922, vii, No. 2, p. 193.

The author terms drug, food and animal idiosyncrasies, hay fever, asthma, serum disease, and dermatitis venenata he terms allergy. Serum disease differs from other forms of human hypersensitiveness in the almost constant characteristic of the incubation period and in its high percentage incidence. Dermatitis venenata differs from the other forms of human sensitiveness in which the skin is affected in the constant and characteristic nature of the lesion. Statistical study and some experiments reveal the following differences in the age incidence of the "natural" allergies, serum disease and dermatitis venenata: (a) The age of incidence of the "natural" allergies increases rapidly in the early age periods but probably does not greatly exceed 10 per cent of any period; (b) the age incidence of dermatitis venenata increases greatly from childhood to adult life and reaches a high percentage (probably about 90 per cent), and (c) the age incidence of serum disease seems not to change during life.

W. LINTZ.

COOKE, R. A.: Studies in Hypersensitiveness. IX. On the Phenomenon of Hyposensitization (The Clinically Lessened Sensitiveness of Allergy). *The Journal of Immunology*, March, 1922, vii, No. 2, p. 219.

Coca has pointed out differences between anaphylaxis and those of allergy so as to make an identity of the two seem unlikely. For,

although a certain degree of lessened sensitiveness can be obtained in allergy by the administration of the exciting agent by mouth, or by injection, this effect in human beings has never been observed to approach the entire insensitiveness of the condition of "complete desensitization" in anaphylaxis in the lower animals. Following subcutaneous injections for therapeutic purposes in cases of asthma and hay fever, the effect has usually been a specific lessening of the general cutaneous reactivity, which, however, never approached extinction. The phenomenon of "local exhaustion" of the allergic cutaneous reaction described by Mackenzie and Baldwin is studied and found, in disagreement with these authors, to be non-specific. It is proposed to distinguish the lessened sensitiveness induced in allergy from the state of desensitization in anaphylaxis by designating the former condition as a state of hyposensitization.

W. LINTZ.

FLEISHER, M. S.: **Relationship of Various Antiorgan Sera.** *Journal of Immunology*, January, 1922, vii, No. 1, p. 31.

The basis of the experiments was the absorption of the various antiorgan sera with the various tissues, liver, kidney, brain, corpuscles, singly and in combination; and the subsequent testing of the complement fixing power of the sera with various tissue antigens. By his methods, the author found that the absorption of an antiorgan serum by a combination of tissues removes more antibodies than does the absorption by a single one of these tissues. No one tissue constantly acted as the best absorbent. Therefore he argues there is a qualitative rather than a quantitative variability of absorbing activity of tissues, which is in some degree specific for each tissue, this specificity or individuality of each tissue being dependent upon any one of these three factors: (1) existence of relationship between certain organs permitting the one non-homologous tissue to react constantly more strongly with another tissue; (2) better absorbent quality of any particular tissue; and (3) existence in each organ of not only the particular homologous specific substances, but also of substances specific, more or less, with other organs.

It was found that the liver absorbed more actively than other tissues; the other tissues are about equal in absorbing activity. He



found in these experiments no clear evidence of specific or fixed relationship between any two types of tissue. He realizes that in using such a complex antigen as an organ, many different types of antibodies are stimulated, some more markedly specific, others of less specificity but wider range.

W. LINTZ.

BANTING, F. G., AND BEST, C. H.: **Pancreatic Extracts.** *The Journal of Laboratory and Clinical Medicine*, May, 1922, vii, No. 8, p. 464

In a previous paper the authors reported experiments which justified the conclusion that some constituent of the pancreas destroys the active principle of the internal secretion of the gland when extracts are made of the gland by the usual method. To eliminate these digestive substances, extracts were prepared from degenerated pancreatic tissue ten weeks after ligation of the ducts of the pancreas by which time acinar but not the insular cells are said to have disappeared. From this material small quantities of very active extracts were secured.

It was suggested that the fetal pancreas might prove a source of an extract rich in internal secretion and yet free from the destructive enzymes of pancreatic juice. In order to test this hypothesis a quantity of pancreas was obtained from fetal calves of less than five months' development. The tissue was macerated in Ringer's solution, and the liquid filtered off. The filtrate was tested on several different diabetic dogs and was found to produce similar effects upon the percentage sugar of the blood and on the sugar excreted in the urine as did the extract prepared from degenerated pancreatic tissue. The extract was not found to contain any proteolytic enzyme. Such extracts were used in two experiments.

The observations were undertaken, partly to determine whether extracts having an antidiabetic power equal to those prepared from the degenerated pancreas could also be prepared from the normal gland, and partly to find out whether frequent injections with active extracts would prolong the life of a depancreated animal far beyond the limit of time such animals ordinarily survive.

In regard to longevity of the depancreated animal, one observation seems to afford conclusive results. This animal lived for seventy days and at autopsy no pancreatic residues were found by macroscopic examination although microscopic examination of serial sections of the duodenum a small nodule of pancreatic tissue (containing no islets) was found in the submucosa. It does not seem likely that so small a piece of pancreas could be responsible for the maintenance of life in the animal but, of course, the experiment is not finally conclusive.

They also conclude that by intravenous and subcutaneous injections of neutral saline extracts prepared from the pancreas of the bovine fetus at about the fifth month, the percentage of blood sugar and the daily urinary excretion of sugar are markedly reduced in depancreated dogs. Daily injections of extract of pancreas enabled a depancreated dog to live for 70 days. The active (antidiabetic) principle of such extracts is destroyed by boiling in strongly acid reaction but it is not affected by the presence of tricresol which may therefore be used as a preservative. The depressor action of the extract is short-lived.

C. M. ANDERSON.

AOKI, T.: **Fuhs-Lintz's Reaction.** *Journal of China Medical School*, May, 1921, No. 132.

*Fuhs-Lintz's Reaction.*—The author tried Fuhs-Lintz's reaction on carcinoma and obtained the following results:—Twenty cases out of 28 cases of carcinoma had positive results with the test. It is just 75 per cent positive cases.

In carcinoma of the stomach, 15 cases out of 17 (or 88 per cent) were positive.

Out of 6 suspected cases of carcinoma of the stomach, 3 cases (or 50 per cent) had a positive reaction.

Out of 5 cases of carcinoma of the oesophagus and intestines, 4 (or 80 per cent) were positive.

Out of 2 cases of carcinoma of the liver, 1 had a positive result, while one case of carcinoma of the pancreas had a negative result.

All the three cases of carcinoma of the uterus had a negative result.



Out of 113 cases of non-carcinoma, 12 cases (or 11 per cent) had a positive result.

If a case has disturbed digestion, and in spite of all the reasonable treatment, no improvement is met with and the symptoms grow worse while emaciation develops so strongly that at last cachexia is met with, and Fuhs-Lintz's reaction should prove positive, even if tumor is not palpable, the case would most probably be of carcinoma. Besides the exceptional cases as enumerated by Fuhs and Lintz, carcinoma in the oesophagus, the intestines, and the liver, and chronic catarrhal peritonitis and cerebral hemorrhages may also have a positive result.

W. LINTZ.

HEIST, G. D., SOLIS-COHEN, S., AND SOLIS-COHEN, M.: **A Study of the Virulence of Meningococcus for Man and of Human Susceptibility to Meningococcus Infection.** *Journal of Immunology*, January, 1922, vii, No. 1, p. 1.

The authors studied the growth of organisms in the whole fresh coagulable blood, sealed in a pipette and incubated. They feel that if organism is virulent and defence poor, growth occurs; and that contrariwise, if the organism is not very virulent and the defense good, growth does not occur. Defibrinated blood showed very poor defense. For meningococcus they found by this method a variation in the virulence of strains, those from the spinal fluid being virulent and growing in the blood, while those from carriers being non-virulent or slightly virulent. Of the series of individuals tested against meningococcus, one of them, one of the authors himself, later developed meningitis, and in all his tests against the various strains there was very poor defense manifested by his blood by this technic against each of the strains.

The points that occur to one are: (1) All infections of meningococcus are presumably transmitted through and acquired through the nasopharynx and some of the strains that are found in that location even though they do not grow by this technic are virulent enough to infect. (2) The paper emphasizes the variability of virulence of organisms and the variability of resistance.

W. LINTZ.

PAXSON, W. H., AND REDOWITZ, E.: **Bacillus Diphtheriae. Immunological Types: Toxin-Antitoxin Relationship.** *Journal of Immunology*, January, 1922, vii, No. 1, p. 69.

Two distinct biologic groups of *Bacilli diphtheriae* exist among virulent strains, as differentiated by the agglutination test. Havens, found that of 206 different strains, 82 per cent were included in one group and the remaining 18 per cent were in a second group.

The authors prepared toxins from the strains of each of these two groups and found that for Group I they obtained a toxin of 300-500 MLD per c. c., while for Group II done the same way simultaneously they obtained only 40-100 MLD per c. c. They then determined the neutralizing relationship of these toxins to the standard unit of antitoxin commonly employed, and found that one immunity unit standard antitoxin contained enough neutralizing power to protect a guinea pig of 250 grams against 50 or more MLD of toxin of either Group I or II, the protection being equally effective.

They likewise determined that antitoxin protected against virulent cultures representing both groups. They injected a dose of organisms which was found fatal to a guinea pig in forty-eight hours. One unit of standard antitoxin was sufficient protection for such a fatal dose of Group I organisms: against Group II strains one unit was sufficient except in one case where the pig died in four days. Against this strain  $1\frac{1}{2}$  or 2 units gave protection. They left therefore that standard antitoxin was sufficient protection for both Group I and Group II virulent cultures, even though there was a biologic difference in the groups by agglutination tests.

W. LINTZ.

ITO, S.: **On the Conjunctiva and Cornea Infection by Bacillus Pyocyaneus.** *Journal of China Medical School*, May, 1921, No. 132.

The author reported three cases of conjunctivitis and corneitis caused by *Bacillus Pyocyaneus* and deals with the bacteriological examination of these cases.

*Methylene Blue*—He generally uses 3 to 5 drops of Loeffler's methylene blue which is added to a test-tubeful of fresh urine; sufficient anilin dye is used to give it a decided blue color. The urine is



shaken and then allowed to stand at room temperature for from twelve to twenty-four hours. A control fresh specimen of normal urine similarly treated is made. At the end of said time the blue color of the urine disappears; the upper layer, however, which is in contact with the air, still remains more or less blue. The control specimen, on the other hand, remains unchanged, retaining its uniform blue color.

W. LINTZ.

FINEMAN, S.: **A Study of Microlymphoidocytic Leukemia.** *Archives of Internal Medicine*, February, 1922, xxix, No. 2, p. 168.

A report of a case of microlymphoidocytic leukemia is given. A summary of the case is as follows:

The hemoglobin and red blood cells remained low throughout and progressively diminished, in spite of twelve transfusions.

The white cell count showed some extraordinarily sudden unaccountable fluctuations. The rise or fall of the white cell count during twenty-four hours would be so great that several counts were necessary during this time. The white cell count was exacerbated periodically. Each period lasted five to six days and during this time the patient's general condition became definitely worse.

A very interesting finding was the presence of mitotic figures in the blood. These were always present when the white count was over 80,000.

The differential counts gave interesting findings. The percentage of polymorphonuclear neutrophils varied from 0.4 per cent to 33.66 per cent.

Nucleated red cells and myelocytes were present in small numbers. These probably were an irritation phenomenon due to the extreme anemia.

The most interesting cell was the "micromyeloblast" of Naegeli and Schridde, or the "microlymphoidocyte" or stem cell of Pappenheim. The total number and relative per cent of this cell was practically directly proportional to the total count. With the rise in the total white count the patient was always clinically worse and coincidentally with this the micromyeloblasts would increase in number and percentage.

The therapy consisted of a high carbohydrate diet, roentgen ray exposures and transfusions. After each exposure to the roentgen ray the white count was diminished with the exception of the treatments given a few days before the patient's death. However diminutions in the count occurred without treatment.

In the beginning it seemed as if the transfusions might be a factor in lowering the white cell count but the last few transfusions had no effect whatever.

The temperature varied between 96.6° and 104° F. (35.8° and 40° C.). A rise in the temperature was usually associated with a rise in the white count, enlargement of the spleen, lymph nodes and tonsils, and a marked increase in general malaise.

Blood cultures were negative.

Metabolic studies showed nothing of value except a slightly increased basal metabolic rate.

Feces, urine, spinal fluid, and kidney function tests were all negative.

The spleen was always palpable. Roentgen ray exposure of the mediastinal, facial, and neck lymph nodes and the spleen itself was followed by marked diminution in the size of the spleen followed each time, however, by an enlargement larger than on each previous occasion.

Lymph nodes of the face, neck, axillæ, groin and mediastinum were markedly enlarged. These also seemed to be reduced in size after each roentgen ray exposure.

The tonsils became enlarged when the white count increased.

At first the liver was not palpable. Toward the end it could be palpated 10 cm. below the costal edge.

*Morphologic Study.*—The author gives a rather lengthy discussion on hematology and also a great deal of the history of hematology. The author himself believes in the monophyletistic theory.

The blood at all times showed numerous stem cells of all sizes. The cells which the author describes and which he refers to as atypical cells had a basophilic cytoplasm and a nucleus in which the chromatin formed a very fine evenly distributed sieve-like network. Morphologically these cells were indistinguishable from typical myeloblasts.

The oxydases reaction was negative in these cells in the blood smears.



The diagnosis from the blood alone would be "micromyeloblastic" leukemia.

The biopsy of a lymph node showed these atypical cells proliferating in great numbers in the capsule, interfollicular tissue, lymph cords, lymph follicles and the germ centers of the lymph follicles.

Transition forms between connective tissue cells of the capsule and these atypical cells as well as between lymphocytes and these atypical cells were present in the capsule.

In the interfollicular tissues as well as in the follicles and even in the germinal centers transition forms between these atypical cells and reticulum and lymphocytes were present.

The lymph follicles and lymph cords showed no sign of atrophy, but had all the earmarks of marked activity. Mitotic figures were numerous. The only sign of atrophy or necrosis was in the capsule.

These atypical cells formed the majority of the cells of the parenchyma.

They constituted by far the majority of the cells of the lymph sinuses and were very numerous in the blood vessels of the node.

From the evidence at hand, the conclusion is justified that in all probability the majority of "myeloblasts" and "micromyeloblasts" of the blood were coming from the lymphoid organs, not only from the portions which, according to the dualists, may give rise to myeloid cells, but the follicles and germ centers themselves.

R. BENNETT.

PARK, W. H., WILLIAMS, A. W., AND MANN, A. G.: **Immunological Studies on Types of Diphtheria Bacilli. I. Agglutination Characteristics. II. Protective Value of the Standard Monovalent Antitoxin.** *The Journal of Immunology*, vii, No. 3, May, 1922, p. 243.

The group of diphtheria bacilli contains strains belonging to several agglutinative types. The toxins formed by these types are however qualitatively alike and, from the practical point of view, quantitatively so. Whether or not these are slight quantitative differences, further studies will be necessary to show. Strong toxin from any diphtheria strain is suitable for the Schick test and for immunization of man or animal. A monovalent antitoxic serum is suitable for protective and curable measures against all diphtheria strains.

W. LINTZ.

HARDT, L. L. J.: **Studies of the Cause of Pain in Gastric and Duodenal Ulcers. II. Peristalsis as the Direct Cause of Pain in Gastric Ulcers With Achylia and in Duodenal Ulcers.** *Archives of Internal Medicine*, May, 1922, xxix, No. 5, p. 684.

This report furnishes additional evidence in support of the theory advanced independently by the author, by Carlson, and by Ginsburg, Tumpowski and Hamberger, to the effect that the pain in peptic ulcer is due not to hyperacidity but to hyperperistalsis which irritates the lesion. Kymographic tracings of the movements of the stomach were made by connecting the kymograph by means of a rubber tube, with a rubber balloon swallowed by the patient and inflated. At the same time gastric contents could be removed by means of a Rehfuß tube also swallowed by the patient. Twenty-five patients were so studied, and it was found that the pains always occurred at the time of the exaggerated "hunger contraction" and were independent of the degree of acidity of the gastric contents. In fact they occurred with some patients exhibiting a complete achylia. The author suggests that the logical treatment of ulcer should therefore be one which aims at controlling exaggerated peristalsis, and brings up the question whether successful surgical measures may not act in some such manner.

T. HOWARD.

HANCHETT, McM.: **Experimental Polyuria.** *The American Journal of the Medical Sciences*, May, 1922, clxiii, No. 5, p. 685.

Clinical evidence, though indefinite, indicates that neither increased nor decreased activity of any portion of the hypophysis is uniformly associated with polyuria. Experimental lesions of the hypophysis itself are not constant in the production of polyuria. Some additional element is the determining factor. Experimental lesions of the hypophysis, similar to those producing negligible excretory changes, when associated with traction upon its attachment to the floor of the third ventricle uniformly produced polyuria. The degree of polyuria was roughly in proportion to the amount of traction. Polyuria associated with hypophyseal changes is due to stimulation of the regional base of the brain, floor of the ventricle, corpora mammillaria, etc. Intravenous injections of pituitrin temporarily



lowered the excretory rate in a polyuria thus produced. Intravenous injections of epinephrin have no effect on polyuria of this type in dogs.

A. T. MAYS.

FINDLAY, L.: **Etiology of Rickets.** *The Lancet*, April 29, 1922, cclii, No. 5148, p. 825.

In Great Britain there are two schools of thought regarding the etiology of rickets, one the Cambridge School which assigns to it a dietetic origin, and the other the Glasgow School to which the author belongs, which believes that defective hygiene is a causal factor. The author began his experiments in 1906. Before beginning his experiments he communicated with Bland-Sutton as to the best method of experimentally inducing rickets in young puppies. He replied that a milk-free diet was the best means. The author fed his puppies on bread, water, rice and oatmeal. The animals did not develop rickets, but marasmus, as Baxter demonstrated in 1881. Control animals fed on milk and oatmeal all became rachitic. One of these animals which was exercised had the least manifestation of the disease. With an increase in the amount of exercise the rickets practically vanished. Another series of experiments was then instituted. Two sets of animals from the same litter were fed on milk, porridge and horse flesh. One set was confined to a cage and the others were permitted liberal exercise. The former became rachitic and the latter escaped it. The author published his results in 1908 and came to the conclusion that rickets is due to confinement and lack of exercise. Hansemann, in 1906 gave the cause as domestication. A Frenchman, Ferdinand Lataste, had previously experimented with Algerian rodents and came to the same conclusion. Rickets was rare in Japan. A Japanese wild ape was confined and developed a typical case of rickets. The author then cited some cases of the development of rickets in closely confined pet puppies of some of his friends.

The author then extended his investigation to 500 clinic cases of rickets and 500 normal controls. He found that the incidence of rickets increased when the air space allotted to each person in a family was small. In marked active rickets the average air space

per person was 396 cubic feet. In the nonrachitic it was 565 cubic feet. Rachitic families were 20 per cent larger than the nonrachitic.

The influence of the thymus was then discussed. Sir A. E. Garrod was of the opinion that hypothyroidism was the cause. Thymectomy did not cause rickets as by the experiments of Renton and Robertson.

The influence of fat was then considered. Puppies fed on a fat-free diet, but given their liberty, remained free from the disease. Those fed liberally on fat but confined became rachitic. Children were fed on fat poor diets and remained free from rickets. The infective theory was then investigated. Complement fixation tests were done using rachitic cartilage as an antigen, with negative results. Blood inoculations from rachitic children into animals were negative.

Hutchison was the first to point out the effect of sunlight in the treatment. The author supplements this by treating children with electricity and massage and ultraviolet ray.

Experiments with calcium were also tried. Deficiency of calcium in the diet produced an osteoporosis. Rickets could however be induced with calcium rich diets. Kramer and Howland found no calcium deficiency in the blood in their cases.

H. JOACHIM.

LYON, M. W., AND TRAGER, V. B.: **Specific Gravity and Acidity of Urine.** *Medical Record*, April 1, 1922, ci, No. 13, p. 543.

An examination of the figures of 1,000 analyses of non-pathologic urines showed the usual specific gravity to be 1.020 and the arithmetical average to be 1.0186.

The degree of acidity, determined by titration with N/10 NaOH, increases directly with the specific gravity.

In normal urines the ratio of acidity to the last two figures of the specific gravity is 1.8, in urines from probable cases of acidosis, as shown by the presence of acetone and diacetic acid, the ratio is 2.3; in urines containing sugar the average ratio was found to be 1.3; in a small number of analyses in cases of marked nephritis the average ratio was found to be 2.1.



The determination of the acidity in urines is of negligible value in detecting the presence of acidosis and of no value in excluding it; it has an important place in determining the results of alkali administration.

R. BENNETT.

ARNETT, J. H.: Splenic and Hepatic Enlargement in Endocarditis: A Study of Two Hundred and Eighty-six Autopsy Findings. *The American Journal of the Medical Sciences*, April, 1922, clxiii, No. 4, p. 590.

The spleen was often found greatly enlarged in patients who had died of acute or recurring endocarditis, and the enlargement occurred independently of liver enlargement. Splenic enlargement was also frequently found in cases with non-cardiac streptococcic infection and about half as frequently in chronic cardiac disease. Although it is impossible to arrive at any final conclusion as to the cause of splenic enlargement in acute and recurring endocarditis the evidence points towards infection rather than back pressure or infarction as being the factor of most importance in causing the spleen to enlarge. Splenic enlargement is an important diagnostic sign in acute and recurring endocarditis and is frequently overlooked in the physical examination.

A. T. MAYS.

PURDY, H. A., AND WALBUM, L. E.: Action of Various Metallic Salts on Hemolysis. *Journal of Immunology*, January, 1922, vii, No. 1, p. 35.

The paper studies the effect of metallic salts on the hemolytic action of saponin on horse red cells, of staphylolysin on goat red cells, and of complement-amboceptor on sheep red cells. Some salts increase hemolysis, some salts inhibit, and some are irregular with an increasing tendency at one dilution and a decreasing tendency at another dilution.

W. LINTZ.

VEDDER, E. B.: **The Etiology of Scurvy. Observations Concerning the Physiologic Action of the Antiscorbutic Vitaliment.** *Military Surgeon*, May, 1922, 1, No. 5.

In a series of experiments on guinea pigs to determine the cause of scurvy Vedder found that this condition was not produced by deficiency of the internal secretions of the thyroid, adrenals, or pituitary, nor was the antiscorbutic vitaliment present in the blood, urine or feces of normal animals. The antiscorbutic vitaliment was not present either in appreciable amounts in voluntary muscle, heart muscle or bone. However, the daily administration of 5 grams of either fresh liver, kidney, lung, spleen, pancreas, thymus or brain protected guinea pigs completely from scurvy for 100 days. He also says that there is evidence that the antiscorbutic vitaliment is not stored as such in the body and that if the antiscorbutic vitaliment is present in these tissues, and is not stored as such, it must form a component part of these tissues.

F. SCHROEDER.

EVANS, A. C.: **The Toxicity of Acids for Leukocytes as Indicated by the Tropin Reaction.** *Journal of Immunology*, May, 1922, vii, No. 3, p. 271.

Incidentally in connection with experiments designed to obtain knowledge on other points in question, many observations were made on the buffer action of leukocytes. In the article certain data are presented, selected by virtue of the freedom from red blood corpuscles of these particular leukocyte suspensions. It shows that when leukocytes are placed in unbuffered solutions of very slight acidity, they absorb H-ions until the pH of the solution is slightly below 7, if their volume is sufficient. Leukocytes added to a neutral or weakly alkaline unbuffered solution will bring it also to a reaction slightly below pH 7. When leukocytes are added to a weakly buffered saline solution such as was used in these experiments, the quantity of H-ions which they absorb depends upon several factors: The total number of H-ions removed from the solution by a given quantity of leukocytes depends upon the nature and quantity of buffer substances in the solution. The dissociation constant of the acid concerned is



also a determining factor. A greater quantity of H-ions was absorbed from HCl solutions than from solutions of the tested organic acids of equivalent concentration. Similar quantities of H-ions were absorbed from acetic and butyric acids, which have similar dissociation constants. It was also observed that leukocytes which have already absorbed H-ions have a reduced capacity for further absorption. Haggard, Henerson, and Evans made similar observations on the buffer action of red blood corpuscles. Their capacity for absorption of H-ions depends upon their previous history. It would be expected that a dense suspension of leukocytes would absorb more H-ions from a given quantity of any solution than would a thinner suspension. The experiments showed that to be the case. These observations are in agreement with those made by Gray upon the eggs of trout, from which he drew conclusions for living cells in general. The data presented in the tables show that leukocytes which have absorbed H-ions have thereby suffered an injury which affects their capacity for phagocytosis. Koltzoff reported that the phagocytizing capacity of *Carchesium* was restored when removed from an acid to a neutral solution. Such was not the case with leukocytes in these experiments. The cumulative effect of repeated exposures to acid solutions was demonstrated many times. It has already been mentioned in connection with the data presented in table IV. It may also be observed in tables VIII, IX, and X. For example, in table VIII leukocytes which had been washed once in citric acid solution of pH 4 showed no injury; and leukocytes which were placed in a citric acid solution of pH 4.6 for the final suspension showed no injury if they had not been previously exposed to acid; but when leukocytes which had been previously washed in citric acid solution of pH 4 were placed in citric acid solution of pH 4.6 for the final suspension, their capacity for phagocytosis was almost completely destroyed. In agreement with many other investigators who have studied the relative effect of inorganic acids on various kinds of living cells, these experiments show that the organic acids studied (possible with the exception of citric acid) have a specific toxicity in addition to the toxicity of the free H-ions, as determined by comparison with the toxicity of solutions of HCl, which undergoes practically complete dissociation in the weak solution used in these experiments. It will be recalled that Harvey compared the results of his own investigations and those of several who had preceded him and that he found little agreement

in the order of the various acids relative to their effect on the different living cells studied. From the data given by Harvey, and that given by Haas and Wyeth in more recent publications, it was possible to tabulate the order of effectiveness on various kinds of living cells of those acids which were used in this study. The comparison, made on the basis of degree of dissociation, is given in table 13. It

shows a perfect agreement in the series

HCL	acetic
lactic	except
citric	butyric

that Harvey found citric acid definitely more toxic than HCL. It may be added here that some observations on the relative effect of these acids on red blood corpuscles indicate that this order would not hold for them. Citric acid showed an unquestionably specific toxicity, greater than that of lactic acid. It has been noted that several investigators have reported that leukocytic activity is stimulated by quantities of acids. Hamburger presented data to show that lipid-soluble substances, including butyric acid, stimulate phagocytosis when present in minute quantities. In the protectol showing the effect of butyric acid on leukocytes figures are given for three tests in which the leukocytes were treated with weaker solutions of varying strength of butyric acid than the experiment showed to be toxic, yet there was no evidence of a stimulative action in any of them. However, it happened in several experiments that higher figures for phagocytosis were obtained when the leukocytes had been treated with sub-toxic acid solutions than when they had been treated with neutral solutions. Such examples may be observed in tables II, IV, VIII and IX. Since, however, such indications of a stimulative action of acids occurred irregularly, and never to a significant degree, it seems more reasonable to regard the mentioned figures as variations due to experimental error.

W. LINTZ.

HODGE, W. R., AND MACLENNAN, M. F.: The Relationship of Lipoids and Proteins to Serum Reactions in Tuberculosis. *Journal of Immunology*, May, 1922, vii, No. 3, p. 253.

The evidence presented indicates that the fixation bodies in human tuberculous sera are lipoidal in character because: Extraction of



dried sera with alcohol, chloroform and ether removes these bodies almost completely. When the sera are dried on filter paper and redissolved in saline there is only a moderate loss of fixation power. This indicates that the active substances redissolve quite readily; protein does not redissolve readily after drying. Fixation bodies occur only irregularly in the euglobulin fraction of the serum; they occur in the supernatant fluid in the same concentration as in the untreated serum. At first sight these observations are opposed to those of Nishida and Petroff who found that the tuberculo-complement fixation bodies appeared in the globulin sediment precipitated by ammonium sulphate. Kapsenberg also found that the fixation bodies responsible for the Wassermann reaction were precipitated in this way. These observations have shown, however, that the complete precipitation of fixation bodies in syphilitic sera is not necessarily accompanied by the complete precipitation of globulin. This is shown by the fact that almost complete precipitation of syphilitic fixation bodies is obtained when lipoidal emulsion (Wassermann antigen) is added to the diluted serum before the precipitation of euglobulin by carbon dioxide. In this experiment only the euglobulin is precipitated, the sediment is not increased in amount, and the remaining globulin fraction can be demonstrated in the supernatant fluid by half saturation with ammonium sulphate. It is evident then, that the fixation bodies in syphilitic sera are not globulins but are merely carried down with the globulin fraction when it is completely precipitated. It seems altogether likely that the precipitation of the tuberculo-complement-fixation bodies in the globulin sediment obtained with ammonium sulphates is of similar nature. The inhibitive bodies in human and certain animal sera appear to be protein in character because: They are almost completely precipitated in the euglobulin fraction of the serum. The inhibitive power of guinea pig serum is not regularly increased following protracted anaphylactic shock when the unsaturated lipoids of the serum are increased. The two sera which showed an increased inhibitive power in the experiments quite possibly contained an increased euglobulin content. It is possible that cellular disruption not only increased the unsaturated lipoids (from the cell wall) in the serum but also occasionally the euglobulin. They are not removed by alcohol, chloroform and ether extraction of dried serum; serum, however, which is dried and redissolved in saline shows a marked loss of inhibitive power. This indicates that

the substances responsible for the inhibitive reaction are protein in character as the proteins of dried serum redissolve again only incompletely. The identity of the substances responsible for the inhibitive reaction of Calmettes and that of Caulfeild seems certain. It is true that there are minor differences but we have found that the active substance in Caulfeild's reaction is precipitated in the euglobulin fraction; Calmette finds that the inhibiteur substance in his hyperimmune sera is precipitated in the euglobulin fraction also. We further found that human sera exhibiting a strong inhibitive reaction by Caulfeild's method also give a strong inhibiteur by Calmette's method. The fact that the substance responsible for Caulfeild's reaction is increased when animals are immunized with the tubercle bacillus, further identifies it with the substance responsible for Calmette's reaction. Calmette finds inhibiteur in high concentration in the serum of hyperimmunized cows. We have found that there is a moderate increase of Caulfeild's inhibitive substance in the serum of immunized rabbits and a more marked increase in the serum of immunized guinea pigs. Evidence is introduced which indicates that the fixation bodies in human tuberculous sera are either removed or destroyed by extraction of the dried serum with alcohol, chloroform or ether. The substances responsible for the inhibitive reaction of Caulfeild are contained almost wholly in the euglobulin fraction of the serum. Evidence is introduced to show that the substances responsible for the inhibitive reaction of Calmette are identical with those responsible for the inhibitive reaction of Caulfeild.

W. LINTZ.

SMITH, G. H.: **An Allergic Reaction of the Tuberculous Uterine Horn.**  
*Journal of Immunology*, January, 1922, vii, No. 1, p. 47.

The uterine horn of a tuberculous guinea pig is immersed in oxygenated Locke's solution. On the addition of a small amount of tuberculous urine a marked reaction by the contraction of the uterine horn occurs in most, but not in all cases. There are controls made by having a normal uterine horn in the same solution and also by adding normal urine. Once having reacted a tuberculous uterine horn reacts very little on repeated trials or, not at all.

W. LINTZ.



HATCHER, R. A., AND WEISS, S.: **The Seat of the Emetic Action of the Digitalis Bodies.** *Archives of Internal Medicine*, May, 1922, xxix, No. 5, p. 690.

Emetics are usually supposed to act in one of two ways; by irritating the gastric mucus membrane, or by stimulating the vomiting center in the medulla. Digitalis and its derivatives have long been thought to induce vomiting by means of their effect upon the medulla. That this action is not the direct effect of the drug upon the medullary center seems to be proved by the experiments of Thatcher and Weiss. Cats with the circulation of the brain very largely eliminated by ligation of the carotids and vertebral arteries vomited promptly upon the intravenous injection of emetic doses of the digitalis bodies. These preparations applied directly to the vomiting center failed to induce vomiting, though vomiting was induced by the application of apomorphin by the same technic.

The constant parallelism between the emetic effect and the cardiac effects of the various digitalis bodies suggested an investigation of the heart itself as the seat of vomiting, through a reflex to the vomiting center. As the afferent cardiac nerves run through the sympathetic very largely, entering the cord above the level of the second cervical vertebra, the authors tried severing the cord above this level, and found that the emetic effect of digitalis was usually blocked by this procedure. The same effect was not obtained by double vagotomy. It is suggested that the vomiting from digitalis represents a protective reflex developed by the heart to check the over-ingestion of a cardiac poison, just as the stomach, a much less vital organ, will protect itself against gastric irritants.

T. HOWARD.

## SECTION ON PEDIATRICS

MOTT, F. W.: **The Reproductive Organs in Relation to Mental Disorders.** *British Medical Journal*, March 25, 1922, No. 3195, p. 462.

The study of the relatives of insane patients affords conclusive evidence of three facts in relation to the causation of mental disease: (1) The importance of a neuropathic and psychopathic heredity; (2) the special liability of the neuroses and psychoses to occur in adolescence and the involutive periods of both sexes, when the sexual function matures and wanes; (3) the influence of child-bearing and lactation, acting as exciting causes.

Of 500 offsprings who became insane, 47.8 per cent became insane at puberty or under 25 years. Of 148 recurrent cases of insanity in women, 21 per cent had children between their respective dates of admission. Also, only 7.9 per cent of children of insane parents were born after the first attack of insanity. The inference is drawn, that this is on account of early involutional changes in the ovaries of all the psychoses. The mental breakdown in adolescence, in the puerperal and lactation states of women, and in the involutive period of either sex, is due to a failure of the vital impulse or the libido of the psycho-analysis. This vital impulse is an inborn character, and, like longevity and durability, is due to bodily conditions. In dementia praecox particularly, there is an inborn genetic lack of durability and reproductive formative activity. In a large number of cases of dementia praecox a primary regressive atrophy of the reproductive organs occurs. There is, generally speaking, a correspondence between the degree of regressive atrophy, of the testes, and the duration of the mental symptoms. The atrophic process may result in all stages of failure of nuclear formative activity of the spermatogenic epithelium, terminating in a complete disappearance,



leaving only the Sertoli cells. This primary atrophy resembles the changes met with in the testes of cases of involutional melancholia, post-adolescent dementia praecox, terminal dementia and maniac depressive insanity. Besides the failure of spermatogenesis, there is a pigmentary degeneration of the interstitial cells in 25 per cent of the cases of dementia praecox, dying in adolescence, a sign of senile decay. This regressive atrophy was not found as a rule in general paralysis and other forms of organic brain disease.

L. JOHNSON.

APPEL, H. N., AND BLOOM, O. I.: Whooping-cough and Its Treatment. *Archives of Pediatrics*, 1922, xxxix, 145.

Bordet and Gengon announced the discovery of the bacillus pertussis in 1906. Two years later Klimbenko showed that the organism carries out the four points of specificity of Koch. From then commences the history of biological therapy of whooping-cough. The New York City Health Department reports for 1920 show that the mortality of whooping-cough is second only among the infectious diseases, and that it is most fatal to infants under one year of age. Griffith cites figures showing that in the United States alone, in the past 10 years, 100,000 children died of the disease. The bacillus pertussis is most virulent in the catarrhal stage, especially to children affected with or recovering from an attack of measles. It is transmitted by direct contact, and is avirulent in the third stage. Incubation period is four to twenty-one days. In uncomplicated cases it is a diffuse catarrhal inflammation of the respiratory tract with predominating nervous symptoms. Czerny maintains that only catarrh is transmitted, the whoop being a psychic infection. In a series of 24 cases, the average leukocytosis was 20,000; the lowest count being 7,600, the highest 85,000. There is an absolute and relative increase in percentage of high polymorphonuclears and lymphocytes, the latter being 75 per cent or more of all white cells. Leukocytes have been counted up to 223,000. The case is on record when an acute appendix complicated an attack of whooping-cough. Often an aura is seen in connection with the paroxysm of cough. The complications are more severe than the disease. Hemorrhages are common and often alarming; they may come from the lungs, stomach,

eyelids, may be purpuric, cerebral, or meningeal. Aphasia has been noted. Laryngitis, bronchitis, and bronchopneumonia are frequent. Lobar pneumonia is rare. Emphysema, pneumothorax and rupture of the lungs have been met with. Among the cardiac sequelæ are cardiac kidneys affected in 20 per cent. Otorrhea is common. All the viscera are liable to fatty degeneration. The resistance to tuberculosis is decidedly lowered after an attack of whooping-cough. In large series of tuberculous cases, an unusually large percentage will give a history of whooping-cough. There is also a great tendency to rickets and a considerable number of asthmas in childhood can be dated back to the resulting emphysema from an attack of whooping-cough.

*Treatment.*—Drugs are worthless for prophylaxis. The main thing is to isolate, which is hardly feasible in a disease lasting from two to three months. A valuable aid is found in vaccine. Medical treatment is entirely unsatisfactory. The usual hygienic measures should be carried out and out-door life encouraged. A sojourn at the seashore is often of value. Adequate clothing must be worn. Concentrated food should be fed after vomiting. Local application to the larynx of solutions of resorcin, cocain, chlorate of potash, peroxid, salicylic acid and 10 per cent antipyrin have been tried. Quinin, boric acid, tannic acid, iodoform and salicylic acid are praised, as means of insufflation. Most drugs have been used: belladonna, bromids, bromoform, antipyrin, quinin, derivatives of opium, cocain, chloral, alum, dilute nitric acid, terpin derivatives, pertussin, diatussin, injections of ether,—all are of slight value. “Of all drugs, a combination of bromids, antipyrin, codein, tincture of belladonna and terpin hydrate seems to give the best results”. Benzyl benzoate has disappointed. Remedies should not be used until the heights of the paroxysmal stage. The Kilmer belt has advantages in severe vomiting. If the paroxysm is accompanied by deep cyanosis, von Naegli recommends the pulling down of the lower jaw. It is moved forward and as soon as the mouth is opened, both index fingers are inserted in the region of the eye teeth and the jaw held firmly. The tongue may be drawn forward. Where spasm is severe, intubation may be performed. Sera have proven a failure. The success of the future lies in the vaccine therapy. The doses were a half to two cubic centimeters intramuscularly. The authors report very great success from various authors. Mixed sensitized pertussis bacterin was used.



FORDYCE, J. A., AND ROSEN, I.: **The Treatment of Antenatal and Congenital Syphilis.** *Archives of Dermatology and Syphilis*, 1922, v, 1.

*Method of Treatment.*—"Since the preliminary report on the treatment of congenital syphilis with intramuscular injections of neo-arsphenamin and mercuric chlorid, our confidence in the matter has grown, and we are decidedly encouraged as to the ultimate outcome in these small patients. The work has been hampered by the difficulties in obtaining the coöperation of mothers as to reporting weekly.

"In the literature one frequently sees the claim that a positive Wassermann reaction in congenital syphilis cannot be changed. Of 47 children with positive reactions who have received one course or more of treatment, 14 gave negative reactions on repeated examination. Among those who still gave a four plus reaction, we have several in whom the blood became negative after one course of treatment and then positive again after a period of rest." "The infection, in acquired syphilis, must be attacked early and treatment must be prolonged to bring about a continuously negative Wassermann reaction.

"Originally we gave 0.075 gram of neo-arsphenamin to infants from 3 to 8 weeks old, at weekly intervals; 0.1 gram from 2 to 6 months; 0.15 gram from 6 months to a year, and from 0.15 to 0.20 gram from 1 to 2 years, in a course of six injections, followed by a rest period of from 4 to 6 weeks. We are now giving from 6 to 8 injections to the course and make the initial dose 0.1 gram for infants from 2 to 12 weeks old; 0.15 gram from 3 to 9 months; 0.2 gram from 1 to 2 years, and 0.25 to 0.3 gram for children 3 years old. The mercuric chlorid, too, we have increased to from 10 to 12 injections to the course, at intervals of a week, and the dosage as follows; 1/10 grain for children from 2 weeks to 6 months old; 1/8 grain from 6 months to a year; 1/7 grain from 1 to 2 years; 1/5 grain from 2 to 3 years, and 1/4 grain for those more than 3 years old.

"Just as in acquired syphilis, the treatment must be individualized and the intervals lengthened or dosage changed if indications arise. The urine should be examined at frequent intervals, as occasionally a trace of albumin is found, but this quickly subsides when the drug is discontinued. We believe 2 full courses each, with proper intervals, should be given, regardless of a negative reaction, and

possibly a third course of mercury. In very feeble infants, it is better to initiate the treatment with mercury, giving about 8 injections before the administration of neo-arsphenamin.

"*Note*:—It is important to use neo-arsphenamin which is especially prepared for intramuscular injection and is neutral in reaction. That put up for intravenous use is slightly alkaline and when injected into gluteal muscles is apt to be followed by tissue necrosis or abscess formation. We would also like to emphasize the necessity of using only sharp needles for these treatments. As a rule, they are not sharp enough when delivered by the manufacturers and should be sharpened on a fine oil stone by the operator.

"To date, we have had no abscesses even in undernourished infants with a poorly developed musculature. No reactions from the drugs have been noted in the dosage given, except an occasional trace of albumin after the mercury. The eye, neurologic and spinal fluid examination should be carried out in the case of adults. In discussion the author stated that neo-arsphenamin was used instead of arsphenamin because it is less painful to the children."

KIMBALL, O. P.: **The Prevention of Simple Goiter in Man.** *The American Journal of the Medical Sciences*, May, 1922, clxiii, No. 5, p. 634.

The prophylactic treatment as carried out for the last three years in the Akron schools consists of the administration of 2 grams (30.86 grains) of sodium iodid, given in 0.2 gram doses daily for 10 consecutive school days, repeated each spring and autumn. There are 2,305 pupils included in the tabulation, girls and boys not having taken the treatment, and 2,190 pupils taking treatment. Of the cases classed as having slightly enlarged thyroids at the first examination and *not taking* the prescribed iodine, the glands of 127, or 13.3 per cent underwent further enlargement, while among those *taking* the prescribed treatment only 3, or 0.3 per cent, underwent further enlargement. In all the cases taking 2 grams (30.86 grains) of sodium iodid twice a year there was not a single instance of exophthalmic goiter nor any evidence of a nervous irritability simulating it. Eleven cases developed an iodid rash which cleared up. The most satisfactory method of administration is by mouth. Small



amounts of some salt of iodine are given, either in solution or tablet form. For private use the syrup of ferrous iodide, or the syrup of hydriodic acid, are excellent. As a public health measure, 2 grains of sodium iodide were used over a period of 2 weeks repeated twice a year. This dosage has prevented enlargement of thyroid in more than 99 per cent of the children.

A. T. MAYS.

BARR, C. W.: *The Nervous Child*. *British Journal of Children's Diseases*, 1921, xviii, 182.

Neurotic children may be divided into two great classes: the restrained emotional type and the unrestrained emotional type. In the latter, intellectual power may be, and usually is, above the average, but emotionally the child is a bundle of contradictions. The young victim of a despotic nervous organization is imaginative, often superstitious, high spirited but timid, worried by trifles, vain, feels he is unappreciated, craves sympathy, has no idea of what discipline means, learns quickly but instantly forgets, works feverishly for a short time and then idles for days, suffers remorse but repeats the offense, affectionate but his love is selfish. Physically such children are thin and slimly built, suffer from night terrors and migraine; occasionally they are sickly and physically weak and have poor vasomotor balance. They feed the army of hysterics and neurasthenics in later life. Insanity often closes the long melodrama.

Children of the restrained emotional type have strong emotions but try to hide all signs of feeling. They are observant and intelligent but so reticent that they are often thought to be dull, sullen, and obstinate. They are sensitive, shy and proud. They yearn for affection but are too shy to show it, they brood over imaginary slights, they misinterpret the conduct of others, and being suspicious, are unresponsive to overtures. They are solitary, introspective, have occasional outbursts of temper, phobias, pass through periods of religious experiences and have no sense of humor. They are prone to become incurable sexual neurasthenics, hypochondriacs, mischief-making spinsters or cross-grained and useless old bachelors; at the worst they may become delusional lunatics and may murder supposed per-

secutors. Few of them may attain distinction in any work worth while, though they may in manhood be industrious in a commonplace way.

Many children of both types show at times some physical sign of nervous disease. They are prone to be peevish infants, to have outbursts of infantile temper without physical cause, they may develop tics, spasmophilia, cyclic vomiting, asthma and stammering. Their likes and dislikes for certain foods are marked.

Children of both types are victims of abnormality in personality; their disease is one of personality. The fundamental factor in the formation of personality is heredity. The explanation may be that while in each parent each system (brain, blood vessels, endocrine glands and the rest) is adapted to the others, in the offspring the interrelation of the various systems is bad. The treatment is to strengthen the will and dethrone the tyrant impulse.

M. B. GORDON.

STILL, G. F.: **Cephalic Bruits in Children.** *British Journal of Children's Diseases*, 1921, xviii, 173.

Most text books do not describe the cephalic bruit which the author discusses in this paper. He studied this phenomena in 200 children, extending in age from 5 months to 15½ years. The bruit can be heard by both the patient and the examiner. The method used for the detection of the bruit was by applying the stethoscope over the fontanelle in open fontanelle cases, while in the older children there was direct application of the observer's ear to the patient's ear. The character of the bruit was the same in both groups: a systolic blowing sometimes twanging bruit clearly different from the continuous hum of a venous bruit. He thinks it is of arterial origin but not conveyed from the heart or from the vessels of the neck. It seems possible that the tortuosity of the carotids at the base of the skull may be a factor and that there may be some slight straightening of the course of the carotid with the increasing size of the skull. The bruit was best heard in children under four years of age, but when heard in older children, may be due to unusual thinness of the carotid wall. He was unable to connect the bruit with any particular



abnormal condition or pathological state. Anemia was not a constant factor. Still concludes that the cephalic bruit is of no serious import.

M. B. GORDON.

THURSFIELD, H.: **Notes on Mongolism.** *British Journal of Children's Diseases*, 1921, xviii, 18.

This study is based on observations on 42 Mongolian idiots. There was no corroboration that the mother is the last born of her family or that she was at the end of the child bearing period at the birth of the mongolian. Health of the mother during pregnancy, difficulty of labor or the presence of infectious diseases like tuberculosis or syphilis seem to have no etiological significance. It is questionable whether or not measures toward prevention of conception have any bearing or influence on the production of the child. The same doubt exists as to the importance of previous miscarriages. In the defects found in mongolians, heart disease was present in 7 out of 42. Incurving of the little finger was found in 13, absent in 16 and not mentioned in 13. Fissured tongue was not present in the first twelve months of life but was marked by the fifth ear. Thyroid extract was of some benefit on speech, general intelligence and behavior; in general it had more of an effect on physical delinquencies than on mental.

M. B. GORDON.

MARRIOTT, W. McK.: **Abnormal Metabolism in Infancy.** *British Journal of Children's Diseases*, 1921, xviii, 129.

Marriott believes bacterial decomposition of the food in the gastro-intestinal tract is perhaps the most important factor in bringing about diarrhea. Acid fermentation in the intestine may be a result as well as a cause of infantile diarrhea. Hot weather and fever produce a distinct diminution of the gastric juice. When the secretions of the stomach and intestines are decreased from any cause, digestion and absorption of food is slow and bacterial growth especially favored by lack of the antiseptic action of the secretions.

The loss of water in diarrheal stools is more marked than that of any other constituent. This loss of water threatens the water reserve of the body and is an important factor in producing deep-seated changes in the intermediary metabolism. The urine of these infants is markedly diminished in volume; there may be almost anuria. It is highly concentrated. The organic nitrogen excreted by the urine and the bowel not infrequently exceeds the nitrogen intake, resulting in a negative nitrogen balance. The blood is concentrated as a result of the water loss; this brings about a diminished peripheral circulation, diminished blood volume and an apparently incomplete diastolic filling of the heart. Finkelstein, Langstein and Meyer attribute the symptoms to a poisoning of the body by sugar, especially lactose and regard the great water loss as secondary to salt loss.

Marriott, however, feels that there is direct experimental evidence that a water deficit in the body (anhydremia) can account for the entire picture presented by these infants, who, after a severe diarrhea, have lapsed into a toxic-like condition with grave disturbances of the metabolism. In the light of our present knowledge, it seems more reasonable to assume that water loss is the important factor in these infants and that the harmful effects of an excess of food, especially sugar, is due to the fact that it leads to an increase in the diarrhea and consequently to the water loss from the body. When anhydremia has existed for any length of time such serious injury to the body-cells takes place that recovery may be impossible even if the lost water is restored. If, however, in diarrhea the water loss can be checked soon enough and sufficient water and mineral matter supplied to the body, recovery may be expected. Arthrepsia is brought about by repeated attacks of diarrhea; it is seen also in infants underfed for long periods or in those suffering from chronic infections.

M. B. GORDON.

CLARKE, F., AND DOW, A.: **Alkalies in Acidosis.** *Nebraska State Medical Journal*, 1922, vii, 21.

The analysis of the blood with respect to its alkaline content indicates the condition in the tissues of the body. The acids in the body are formed from oxidation of carbon, sulphur and phosphorus. Sellards gives the following methods by which a slight alkaline reaction is maintained in the body.



*First*, by ingestion of fixed bases in food.

*Second*, through elimination:

(a) Through carbon dioxid by the lungs; (b) through elimination of acid by the kidneys; and (c) neutralization of the acid in the body by ammonia.

Carbonic acid and phosphoric acid, therefore, protect against acidosis in the body; produce a minimal chemical change in the blood and are quickly eliminated; the first by the lungs, and the second by the kidneys.

Proteins aid in keeping the reaction normal, also protect against acidosis with alkalosis, being amphoteric they combine with either acid or alkalies without chemical change. Henderson describes the "buffer" property of the blood as ability to take up a certain amount of either acid or alkali without noticeable change in reaction.

Alkalosis, according to Rowntree, is caused by too large quantities of alkali, resulting in overcoming the normal alkaline tolerance, of the blood and tissues. Symptoms are coarse tremors, with rigidity and relaxation of the sphincters. Patient may also develop tetany with some drowsiness, and show passage of large amounts of alkaline urine. This occurs only as a result of over-burdening the body tissues with alkalies, given for therapeutic purposes.

Acidosis is particularly common with severe diarrhea of infancy and childhood. The chief symptom is hyperpnea, resembling the breathing in pneumonia, but without respiratory grunt, seen in the pneumonias of infants.

Laboratory tests for detection of acidosis include: (1) Direct examination of the blood; (2) examination of the urine; (3) estimation carbon dioxid tension of the alveolar air—most accurately by the method of Van Slyke. Schloss and Stetson, in a series of 27 normal cases, found the carbon dioxid combining power of the blood ranged from 46 to 63 cubic centimeters carbon dioxid to 100 cubic centimeters of plasma, while in 17 out of 19 cases of diarrhea with toxic symptoms, the figures were 13 to 38. If the figures with Van Slyke's method are above 40, they are normal. Below 40 acidosis is present to a greater or less degree; below 20 incompatible with life.

Estimation with a Van Slyke apparatus is of great value in differential diagnosis. The author mentions an instance in differentiating between acidosis and intussusception. Further, it is of great value in diagnosing acidosis clinically in children before it has reach-

ed a far advanced stage. If bicarbonate of soda is given in the late stages, it may often stop the hyperpnea, but nevertheless the child may die. Rachford believes that large doses of soda are of no value and has discarded them. Howland and Mariott, in infants under one year of age, give as much as 150 grains in twenty-four hours, while Chapin and Myers advise  $7\frac{1}{2}$  grains for every 40 pounds of body weight.

The authors' experiments include a series of 15 infants under one year of age. The blood was obtained usually from a longitudinal sinus. His conclusions are that absorption by the mouth of sodium bicarbonate is very slow, also too delayed to do much good in acute cases. Ringer's solution by the intraperitoneal route has no effect in increasing the carbon dioxid combining power of the blood. Likewise, a 4 per cent solution of sodium bicarbonate is of little value. Larger doses than a 4 per cent solution have a very distinct effect by increasing the blood alkalinity, but accompanying is the danger of the alkalosis. Absorption by the rectum is more slowly than by mouth.

Van Slyke apparatus is practical in differential diagnosis.

SHEFFIELD, H. B.: **Diphtheritic and Postdiphtheritic Paralysis.** *Medical Record*, March, 4 1922, ci, 362.

Diphtheritic or rather postdiphtheritic paralysis is observed comparatively more frequently nowadays than prior to the use of diphtheria antitoxin. This is readily explained by the fact that as a result of antitoxin treatment so many more children survive an attack of diphtheria and hence are more liable to its aftereffects. Postdiphtheritic paralysis seems to be more common in apparently mild cases of diphtheria. The apparent lack of correlation between the degree of severity of the attack of diphtheria and the frequency of concurrence of paralysis has led to a great deal of uncertainty as to the actual cause of postdiphtheritic paralysis. Careful study has led the author to the conclusion that we are actually confronted by general sepsis, giving rise to sudden paralysis during the acute course of the diphtheria (*e. g.*, heart death), and local toxic action leading to the more gradually developing postdiphtheritic polyneuritis. Postmortem findings tend to confirm this assumption. Thus, on the one hand we find a parenchymatous and granular degeneration of the



heart muscle, a toxic myocarditis, in connection with similar degenerative lesions in the liver spleen, kidneys and brain; in short, lesions that are commonly found in very grave forms of septic processes; and on the other hand, pathological processes that are limited essentially to the peripheral nerves and contiguous structures. In other words, in the latter case we are dealing with a selective toxication similar to that observed in poliomyelitis and kindred diseases, or in polyneuritis due to chemical poisons, as for example, lead or alcohol. Involvement of the palate usually precedes that of any other portion of the body. In close connection with the paralysis of the throat and most probably as an immediate extension of the peripheral degenerative process along the cervical plexus, the neck is the next most frequent seat of predilection for the effects of the diphtheritic poison; the process then spreads to other portions of the cord. Hence the loss of the patellar and often the Achilles tendon reflexes and the gradual appearance of pain and weakness or paralysis of several groups of muscles of the extremities. In the arms the muscular disorder is characterized by an irregular tremor and incoördination. After some time, especially in severe cases, the muscles lose their response to the faradic current and show marked evidence of atrophy. The irritability of the nerve trunks is feeble to both the faradic and galvanic currents. Less frequently the paresis extends to the muscles of the trunk, abdomen and thorax. Occasionally the affection of the respiratory muscles is very grave in character, and exceptionally may even lead to a fatal issue. Whether or not in such cases there is simultaneous degeneration of the heart muscles or vagus nerve is not fully established. In both cases there is more or less marked dyspnea and arrhythmia. The eyes quite frequently present signs of diphtheritic paralysis. In very severe cases we may also find retention or incontinence of urine and tropic disturbances. Diphtheritic polyneuritis is most apt to be mistaken for poliomyelitis, especially of the so-called polyneuritic type. In both of these affections, pain and paralysis form the paramount symptoms and the history must be inquired into. The author had the opportunity of observing an eight-years old girl suffering from progressive bulbar paralysis which was mistaken for postdiphtheritic paralysis. Postdiphtheritic paralysis is the result of a degenerative process, be it chemical or bacterial, of the peripheral nerves, primarily originating at the seat of the diphtheritic lesion. Hence, in order to prevent the

paralysis we have to endeavor to destroy the toxic products at their primary source, which is generally the nasopharynx. The throat should be actively treated locally. The following combination will be found particularly useful for that purpose:

Acidi phenolis .....	grain	i
Resorcini .....	grain	ss
Pulveris camphoræ .....	grain	xv
Alcoholis .....	3	iv
Glycerini q. s. ad .....	3	iii

M. S. Swab throat every three to six hours.

Simultaneously with the throat treatment, the nose is thoroughly cleansed with warm boric acid or Dobell's solution. It is generally recognized that strychnin is a useful remedy in both the acute, acid, and the chronic peripheral neuritis, and the author believes that if strychnin be administered early enough it is a very efficient preventive of the diphtheritic paralysis. In severe cases it should be given hypodermatically (grain 1/60 t. i. d.), otherwise by mouth and its use should be considered for several weeks. The feeding should receive especial attention, more particularly in infants. Where the paralysis is complete, the infant must be fed by lavage with a small catheter introduced into the stomach by way of the nose. If the pain is severe enough, the salicylates with or without pyramidon, will give prompt relief. A well-padded felt collar will be found very useful to support the child's neck and also to relieve pain in paralysis of the muscles of the neck; and a warm tub bath, followed by gentle general massage should be given daily, for the soothing effect upon the peripheral and central nerve systems as well as to stimulate the body musculature. Rest in bed is essential during the early course of the polynueritis, and more especially when the heart or respiratory muscles are involved. When cardiac arrhythmia persists the author has obtained considerable success from the admission of small doses of digitalis.

GITTINGS, I. C.: **The Occult Disease of Childhood.** *Illinois Medical Journal*, June, 1922, xl, p. 445.

Children varying in age from five months to eight years in which the only common symptom was irregular temperature ranging in the



several cases from slightly subnormal to as high as 104.6° F. (40.3° C.) lasting from a few days to several weeks in the various cases.

Seven of the 8 cases gave a history of vomiting. In other respects the symptoms varied from those of a meningitis to those of a simple attack of functional diarrhea. The diagnosis depended solely upon the urinary examination, and physical in no case revealed the cause of the symptoms.

The urinary examination showed the urine acid with the presence of variable quantities of albumin and a moderate or excessive number of leukocytes. The diagnosis of pyelitis was made.

This disease is becoming to be recognized as a rather common disease of young children. The method of infection occurs in several ways. In females the infection may arise from ascending infection through the ureters, the infecting material coming through the easy passage from the anal region through the urethra and bladder to the ureters. Lymphatic transmission from the bowel or pelvis and periureteral region is probably very common. Hemotogenous infection is mentioned as a possibility. The diagnosis is made by an examination of the urine *E*, several examinations being necessary using a drop on a slide without a cover glass with the high power "*D*" objective, the presence of more than 10 leukocytes per field with increasing numbers of leukocytes as the disease progresses makes the diagnosis of pyelitis complete.

Care should be taken that the urine is not extravenously contaminated and the specimen should be examined within a few hours (not more than 10 or 12 hours) after collection. If local irritation exists around or contiguous to the external meatus extraneous leukocytes may lead to error. In such event catheterization will avoid this contamination.

Treatment consists in removing any foci of infection; the ingestion of large quantities of water (16 to 24 ounces in infants) in addition to other liquid foods; and the administration of citrate of soda to infants in divided doses aggregating 60 grains including a larger dose at bedtime to carry over the period when acidity is highest and intake lowest.

If no improvement occurs in five days hexamethylenamin is given in large dose (15 grains) in twenty-four hours for infants of five or six months, at the same time discontinuing all alkali. Acid sodium

phosphate or dilute hydrochloric acid will produce sufficient acidity of the urine to render the hexamethylenamin effective.

In long-continued cases the hypodermic injection of citrate of iron is indicated for the secondary anemia.

Inasmuch as many of these cases are incident to and follow attacks of diarrhea much care should be given immediate and proper cleansing of the anal region after evacuation of the bowels.

PARK, J. H., AND MICHAEL, J. C.: **A Peculiar Eruptive Disease Occurring in Infancy.** *American Journal of Diseases of Children*, June, 1922, xxiii, 521.

**REPORT OF CASE.—History.**—Baby R. M., age 8 months, artificially fed, was perfectly well until October 22, 1921. Without prodromata of any sort she became acutely ill. When the child refused a feeding the mother took her temperature and found it to be 103° F., by rectum. Two hours later the temperature was 104° F. The child was irritable, but was not toxic.

**Physical Examination.**—The physical examination was negative, save for moderate redness of the pharynx and a distinct redness of the posterior quadrants of each ear drum. Urinalysis was negative. A blood count showed: leukocytes 6,600; lymphocytes 82 per cent. Paracentesis of both drums was performed but no discharge followed and there was no drop in temperature.

**Clinical Course.**—The following morning the temperature was 102.4° F. but mounted toward evening to 104.2° F. The next morning it was 100.4° F. and remained above 101° F. all day. A leukocyte count this day was 5,600 with 87 per cent lymphocytes. On the morning of the fourth day, the temperature was 100.8° F.; by that evening it had fallen to 99° F. (During these days there was no apparent cause for the fever).

At this time a rash appeared, at first on the buttocks, back and chest, and rapidly spread to the back of the neck and scalp and the rest of the trunk. The extremities remained comparatively free. The eruption consisted of closely aggregated pale pink macules or slightly elevated maculopapules. The rash was profuse and confluence led to the formation of several irregular macules of comparatively large dimensions. A few of the lesions possessed urticarial features.



The temperature remained normal from the time of the appearance of the eruption, and thereafter the patient appeared as well as before the illness began.

The eruption reached its height in twenty-four hours, and involuting rapidly, disappeared in another twenty-four hours. No desquamation ensued.

**ANALYSIS OF CASES.**—A picture of the symptomatology from the cases observed is as follows:

*Onset.*—This was abrupt in all cases, the child being apparently well the day before the illness began. Usually the mother or attendant discovered that the child was warmer than usual, and on taking the temperature, found it to be from  $101^{\circ}$  to  $105^{\circ}$  F. by rectum. Fretfulness and irritability were almost invariably present. Prostration was lacking, as well as gastro-intestinal symptoms.

*Fever.*—The fever mounted rapidly, reaching as high as  $105^{\circ}$  F. on the first day, but usually reached its maximum on the second or third day. It continued high, with moderate matutinal remissions for from three to five days, when it dropped suddenly to normal or subnormal. Practically all cases pursued the same febrile course. In an occasional case, the fever fell by lysis.

Pulse and respiration were in normal ratio to the temperature.

*Eruption.*—With the fall in temperature a rash appeared. It was first noted most often either on the buttocks or on the sides of the neck, beginning as discrete macules from 2 to 3 mm. in diameter. It appeared rapidly on other parts, and at its height was usually most profuse on the trunk, and least intense on the extremities. Typically, it presents a distinctly morbilliform aspect. The lesions are pink to rose colored, fairly well defined, either absolutely level with the sound skin, or occasionally slightly raised maculopapules. They may be entirely discrete, but in some cases presenting a profuse rash confluence occurred, with the formation of lesions several centimeters in its height in twenty-four hours, lasted another day, and disappeared without desquamation.

*Physical Findings.*—Repeated examinations failed to furnish adequate cause for the fever. In one case there was a distinct redness of the posterior half of each ear drum, and in several other cases there was moderate congestion of the pharynx, tonsils, and soft palate. The lungs and heart were normal, as were the other viscera. There was no adenopathy.

*Laboratory Examinations.*—Twenty-two blood counts were made in eighteen cases. The highest leukocyte count was 7,800 and the lowest 4,800. Four counts were between 4,500 and 5,500; thirteen between 5,600 and 6,500, and five between 6,500 and 8,000.

In two cases the lymphocytes were between 65 and 75 per cent; in seventeen cases between 76 and 85 per cent, and in three cases more than 85 per cent.

Leukopenia with lymphocytosis occurred in all of our cases in which the blood was studied. These findings occur at all times during the preeruptive stage, and in conjunction with the clinical symptoms present a picture which is definite and characteristic. Veeder and Hempelmann and Greenthal likewise noted the leukopenia, and lymphocytosis, which seems to be an essential part of the syndrome.

In one case a blood culture was negative. All urinalyses were negative, save for minor transitory changes, such as occur in any febrile condition.

*Complications.*—There were none.

*Age Incidence.*—The youngest patient was 4 months of age; the oldest 2 years.

*Sex.*—Ten patients were males, eleven were females.

*Feeding.*—Fourteen patients were completely artificially fed; seven received both breast and bottle. None was entirely breast fed.

*Communicability.*—In no instance was there evidence of contagion, nor have two cases occurred in the same family. There has been no recurrence.

*Diagnosis.*—In the preeruptive stage, otitis media, influenza, concealed pneumonia, typhoid and pyelitis are suspected, but can be ruled out by appropriate examination as well as by the further course of the disease.

Of the exanthems only rubella and measles need be considered seriously. The latter can be excluded by the absence of catarrhal symptoms and Koplik spots; by the continuance of fever after the appearance of the eruption, and by desquamation. Rubella has a short prodromal period and the fever rises with the eruption. There is postcervical adenopathy and desquamation. In each of these diseases contagiousness is a feature.

Toxic erythemas may be considered. The rash in this condition may closely simulate the one under consideration, but in toxic erythema, a definite preeruptive stage is lacking. Drug rashes have



been eliminated by the history. The fact that the eruption is non-contagious has led us to consider seriously an allergic etiology. We contemplate doing protein sensitization tests as the opportunity arises.

*Discussion.*—Our own experience and that of others leads us to believe that this disorder is a definite clinical entity. The outstanding features are the abrupt onset, the high fever of from three to five days duration without apparent cause, and the appearance of the morbilliform rash coincident with a critical fall of temperature to normal. Additional points of distinction are the apparent non-contagiousness, and the predilection of the disease for infancy. Moderate leukopenia and lymphocytosis appear to be the only significant laboratory findings.

In reviewing the reports of others, we have noted the practically complete accord of all observers as to the clinical course of the disease. There are, however, some discrepancies in the observations which should be noted. For instance, Zahorsky, Westcott, and Levy found enlargement of the superficial cervical lymph nodes, especially the posterior group, in a large majority of their cases. Veeder and Hempelmann, Greenthal and ourselves have not observed any significant adenopathy.

Veeder and Hempelmann, and Greenthal noted very slight desquamation in a few of their cases, while other observers are unanimous in stating that it is absent. In our experience desquamation has never followed the involution of the eruption.

*Conclusions.*—The pertinent facts of twenty-one cases of an unusual disorder occurring in infancy and childhood have been recorded.

This condition is distinctive and appears to be a clinical entity. We are able to confirm the findings of others that leukopenia and lymphocytosis occur with such uniformity as to be of significance. We have, likewise, noted an entire lack of contagiousness. The etiology is unknown.

## SECTION ON ROENTGENOLOGY AND ELECTRO- THERAPEUTICS

McKEE, G. M., AND ANDREWS, G. C.: **The Value of Roentgen Therapy in Dermatology.** *The American Journal of Roentgenology*, April, 1922, ix, p. 241.

The authors present a comprehensive list of skin lesions which are amenable to roentgen therapy. This list is divided into groups in relation to susceptibility to roentgen therapy in relation to results obtained with other methods of treatment.

### GROUP I

Bromidrosis, localized	Keloid
Dermatitis papillaris capillitti	Rhinoscleroma
Favus, of the scalp	Tinea Tonsurans
Hyperidrosis, localized	

In this group are those diseases in which irradiations offer the sole means of establishing a permanent cure with a reasonable degree of certainty. The author says that this statement is not literally true of every individual example of entities in this group, pointing out that some cases of tinea tonsurans, rhinoscleroma, etc., may be cured by other methods but that in a broad pure irradiation is the only comprehensive, successful measure.

### GROUP II

Granuloma fungoides	Sarcoma, Kaposi type
(mycosis fungoides)	Sarcoma, giant cell
Hodgkin's disease of the skin	Leukemia cutis
Lymphagranulomatosis cutis	Pruritus

In this group irradiation is the most useful treatment, although because of the fatal issue in all of these diseases, except pruritus, alleviation and not cure case be expected.



## GROUP III

<i>Acanthosis nigricans</i>	<i>Keratosis follicularis</i>
<i>Addison's disease</i>	<i>Kraurosis vulvæ</i>
<i>Granulosis rubra nasi</i>	<i>Parapsoriasis, lichenoid type</i>

Irradiation is reported to have been of advantage in these diseases but the reports of cases are too few to draw definite conclusions; no other remedies have been of avail.

## GROUP IV

<i>Actinomycosis</i>	<i>Granuloma annulare</i>
<i>Angioma, cavernous</i>	<i>Lupoid sycosis</i>
<i>Angioma, senile</i>	<i>Lupus miliaris disseminatus</i>
<i>Angioma, strawberry mark</i>	<i>Serofuloderma</i>
<i>Blastomycosis</i>	<i>Sycosis vulgaris</i>
<i>Carbunculus</i>	<i>Synovial lesions of the skin</i>
<i>Callositas</i>	

Irradiation is the method of election in the treatment of these diseases as it is almost a specific and results in a permanent cure. Other methods of treatment are often successful.

## GROUP V

<i>Epithelioma, basal cell</i>	<i>Paget's disease</i>
<i>Erythema induratum</i>	<i>Sarcoid</i>
<i>Keratosis</i>	<i>Tuberculosis orificialis</i>
<i>Leukoplakia</i>	<i>Tuberculosis verrucosa cutis</i>
<i>Lupus vulgaris</i>	<i>Xeroderma pigmentosum</i>

Excellent results can be obtained with irradiation alone in the diseases of this group. For the best results the cases must be selected and very often it is necessary to combine irradiation with surgery or other means of treatment. These diseases can be cured with treatment other than röntgen rays or radium.

## GROUP VI

<i>Acne varioliformis</i>	<i>Cornu</i>
<i>Acne vulgaris</i>	<i>Lymphangioma circumscriptum</i>
<i>Chellitis exfoliativa</i>	<i>Verruca vulgaris</i>
<i>Chellitis glandularis</i>	

In this group the diseases can be cured with regular dermatological treatment but irradiation gives the best comparative results.

## GROUP VII

<i>Onychomycosis</i>	<i>Paronychia, chronic</i>
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All methods of treatment are uncertain in these two diseases, but irradiation has produced permanent cures in some instances.

## GROUP VIII

Furunculosis

Rosacea

Pityriasis rosea

Sporotrichosis

In this group the older methods of treatment usually give better results than does irradiation.

## GROUP IX

Epithelioma, prickle cell

Rhinophyma

Hypertrichosis

Saccoma, general types

Nevus pilosus

The diseases of this group may be cured with the roentgen ray or radium, but as a rule better results can be obtained with other methods.

## GROUP X

Dermatitis exfoliativa

Lichenification

Dermatitis venenata

Lichen planus

Eczematized ringworm

Neurodermatitis

Infectious eczematoid dermatitis

Pompholyx

Intetrigo

Psoriasis

In obstinate cases in this group irradiation is often fruitful of good results, but should be employed only under intelligent dermatological direction.

## GROUP XI

Lupus erythematosus

Tuberculide

Prurigo

Irradiation is occasionally of benefit.

## GROUP XII

Folliculitis decalvans

Pernio

Lichen scrofulosorum

Streptococcic lymphangitis,

Epithelioma, multiple benign

chronic

Syringoma

Not enough evidence has been obtained as to results of irradiation upon diseases of this group to justify a statement of its true value.

## GROUP XIII

Angioma

Kraurosis vulvae

Cornu, soft

Leukoplakia

Keratosiis

Lupus erythematosus

Lymphangioma

Beta rays are of more value in these diseases than gamma rays or roentgen rays.



CRAIG, F. A.: **The Occurrence of Physical Signs Suggestive of Aortic Defects.** *The American Journal of Medical Sciences*, May, 1922, clxiii, No. 5, No. 602, p. 649.

As a matter of diagnostic interest, 5706 policemen and firemen were examined in Philadelphia. Forty-nine presented evidence suggesting the presence of aortic changes. One showed definite signs pointing to the presence of an aneurysm, the diagnosis confirmed by roentgen-ray examination. Nine showed definite aortic changes by roentgen-ray examination. Among these, seven men, all over forty-seven years of age, had definite physical signs of dilatation of the aorta. The characteristic signs of dilatation were a systolic aortic murmur, manubrial dullness, and the characteristic clanging quality of the aortic second sound. Two other cases presented definite aortic changes by x-ray examination, but without accentuation of aortic second sound, and with normal blood-pressure.

A. T. MATS.

SECTION ON  
NEUROLOGY AND PSYCHIATRY

PFÄHLER, G. E., AND PITFIELD, R. L.; **Calcification of the Pituitary with Hypopituitarism and with Symptomatic Treatment.** *American Journal of Medical Sciences*, April, 1922, clxiii, No. 4, No. 601, p. 491.

Nine cases are reported of calcification of the pituitary, with definite deposits recognizable on stereoscopic studies of the sella turcica. All but one case had definite clinical symptoms of pituitary disease. Pfahler studied the sella turcica in 75 patients without pituitary symptoms, and demonstrated some evidence of calcification in 4 cases (5.4 per cent). The absence of symptoms was accounted for by compensation of the other endocrine glands.

A. T. MAYS.

BOIDIN, L., AND MASSARY, J. DE.: **Acute Meningomyelitis after Erysipelas with Syndrome of Massive Coagulation. Polymicrobial Infection (Streptococcus—Staphylococcus and Pyocyanens) ) Meningomyelitis aigue post-erysipélateuse, etc.).** *Bulletin et memoires de la medecine des hopitaux de Paris*, 1922, xlv, 418-422.

Cases of meningitis and myelitis in course of or following erysipelas are exceptions. Clinically the authors observed, after a rather slight erysipelas of the face, the sudden appearance of the classical syndrome of transverse acute myelitis. The patient speedily succumbed after having shown signs of ascending extension of the myelitic process. At autopsy besides the important and expected lesions of diffuse hemorrhagic myelitis, infiltrative and degenerative, a purulent meningitis with much extradural suppuration. There was a



polymicrobial infection. In the extra dural abscess, cultures gave pyocyanens in the pure state. In sections of the cord, there were numerous microbial masses composed of staphylococci associated with pyocyanic bacilli. At autopsy the blood culture was negative. The extra dural abscess gave pure cultures of pyocyanens. In sections of the cord, there were numerous islands of microbes. These were often composed solely of cocci which had all the morphological characteristics of staphylococcus; others were composed of staphylococci and bacillus pyocyanens. In one or two of these masses there were a few chains. The myelitis was due especially to a staphylopyocyanic association. In erysipelas having its origin in a strictly streptococci infection, one does not find microbial associated in the plaque. But erysipelas may, as in this actual observation, complicate a staphylococci infection; it may occasion large lesions chiefly in the limbs; in all these cases, the strepto-staphylo-pyocyanic association is extremely frequent. It is then that the Delbet bouillons (killed cultures of streptococci, staphylococci and pyocyanens) give their maximum of action and reaction. In pure non-suppurative erysipelatos dermitis, phenomena of shock are exceptional and the curative action rather doubtful in the adult. On the contrary when there is associated suppuration and infection reactional phenomena are not rare and are sometimes followed by a noticeable improvement. The associated microbes, particularly pyocyanens, do not seem to be very dangerous. Some authors even attribute to them a favorable rôle.

LEMCHEN, B.: **Moonshine Psychosis.** *Illinois Medical Journal*, May, 1922, xli, No. 5, p. 345.

The psychosis ordinarily seen in chronic alcoholics as delirium tremens, alcoholic paranoia, etc. are not observed in those using moonshine. In the latter class such a person is stuporous, is more or less unconscious and in this state he either dies or recovers. If he recovers he is unable to recall anything that has happened during his unconscious period and in this way his condition resembles the epileptic. If he has hallucinations they are usually visual, while auditory hallucinations are more common in the chronic alcoholic. The author states that the form of a psychosis a person develops depends more on the toxins circulating in his body than on inherited tenden-

cies, different toxins attacking different cells. The alcohol in bonded whiskey intoxicates the cells in the special centers giving use to different forms of hallucinations, while the volatile alcohols in moonshine seem to attack the cells in the various association centers and in this way cause all degrees of impairment of consciousness and judgment.

Five most interesting cases are reported.

G. LORDI.

**STOLL, H. F.:** **The Early Manifestations and Rational Treatment of Tabes Dorsalis.** *The American Journal of the Medical Sciences*, May, 1922, clxiii, No. 5, p. 723.

A review was made of the history of 60 cases. Pain was present in 60 per cent of the cases. It is the most important symptom complained of. It is not always intense and characteristic, but is usually sudden in onset, stabbing in nature, with rapid abatement "lightening pains". Incontinence or unconscious distention of the bladder is often an early symptom. Sluggish and diminished pupil response to light regularly precedes immobility. In 60 per cent of the author's cases knee jerks were absent; in 10 per cent, much increased. The blood Wassermann was positive in 65 per cent of 54 cases tested. Thirty-eight cases had the spinal fluid examined and in 66 per cent the Wassermann was positive. The pupils may be normal, the deep reflexes present, yet the symptoms may be due to early meningeal changes about the posterior nerve roots. The diagnosis of tabes does not rest on any one set of data. The symptoms, physical signs, and blood and spinal fluid examinations must be considered. The rational treatment of tabes should include not alone the administration of antisyphilitic remedies, but the employment of all known agencies for the improvement of the general health, such as, care of foci causing infection (peridental abscesses); correction of the tabetic posture, re-educational exercises for marked ataxia; hydrotherapy; etc. While it is estimated that 25 per cent of poorly treated syphilitics subsequently develop syphilis of the nervous system, less than 3 per cent of the cases, treated intensively during their primary stage show changes in the spinal fluid at the end of treatment. Arsphenamin intravenously with mercury and



iodides will prove sufficient in many cases, especially the early ones. A spinal fluid examination should be advised at the conclusion of the second series of arsphenamin treatments. It is imperative in all "Wassermann-fast" cases. When the symptomatic or serologic response to intravenous treatment is unsatisfactory, or in the presence of a severe cardiovascular lesion, which makes treatment hazardous, intraspinal treatment should be instituted. If properly administered, intraspinal treatments are less serious. The amount of treatment depends solely on the Wassermann test; the general condition of the patient is deserving of more consideration than it often receives. Periodic examinations of the blood and spinal fluid should be made throughout life.

A. T. MAYS.

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## SECTION ON GENERAL MEDICINE

MCCASKEY, G. W.: **Chronic Urticaria of Five Years Duration Probably Due to Chronic Acidosis.** *The Journal of Laboratory and Clinical Medicine*, June, 1922, vii, No. 9, p. 534.

The author presents a case of severe chronic and intractable urticaria. In a careful study of the data the low alkali reserve (50+) appeared to be the most important clinical finding. The patient was placed upon sodium bicarbonate, with an exclusive diet of milk, cream and cereals, and a borax bath once a day. In two weeks the patient reported entire freedom from urticaria. Improvement from this time on was rapid, and in about another week the symptoms disappeared entirely and only recurred in a very light form twice since then for a single night, each time coincident with a "cold".

The fact that the patient was placed on a diet, and that the urticaria recurred with "colds", makes us wonder if the etiology was really acidosis, but at any rate the improvement of the state of acidosis was coincident with the clinical improvement, for the alkali reserve rapidly reached 66 per cent with large doses of alkali.

C. M. ANDERSON.

O'REILLY, A.: **Scoliosis.** *Journal of Missouri Medical Association*, 1922, xix, 74.

Scoliosis is divided into two types: (1) The postural or total curve, due to faulty posture or as the result of a weak musculature,—a long sweeping curve from the neck to the sacrum; there are no bony



changes in this type. (2) Structural curve, composed of two or more curves in which definite bony alteration has taken place.

The postural curve is best corrected by gymnastics, postural exercises, and by the use of a light support, such as a brace, a leather or celluloid jacket.

The structural curve is always compound, most difficult to treat, since changes take place in the vertebrae, especially in the bodies, which become wedge-shaped, compressed on the concave side, and expanded on the convex. With the development of the curve, the bodies of the vertebrae rotate from midline toward convexity of curve. This rotation is always present in structural scoliosis. Lovett believes that the spine rotates, as an elastic curve rod, if bent laterally, twists on itself. Feiss believes that it is due to the elastic pressure from the ribs on the convex side, expanding, and stretching the muscles, the pressure being transmitted posteriorly to the rib attachment, causing the rotation in the opposite direction. Tubby believes that the body weight acts through lateral curvature in two directions: one tending to displace further the vertebrae to the convexity of the curve. Bodies of the vertebrae tend to displace, relatively the arches do not—this causes convex rotation. The author believes this last theory more plausible, especially since compression takes place on the concave side, and expansion on the convex.

*Treatment.*—This is directed to the correction of lateral displacement and of rotation. This last is most difficult to correct and the patient must be under constant and most careful supervision. Postural and gymnastic exercises aim to correct and improve the posture and to strengthen the weakened spinal muscles in order that they may hold the spine in the improved condition.

The best results in the correction of the deformity comes through the use of apparatus which applies pressure on the convex side of the curve, upon the maximum point of rotation; applied in either the erect or the prone condition. Active exercises are also used to correct the deformity and stretch the shortend side. If used alone for a short time only each day, the spine tends to relapse. Braces, when applied by one who is familiar with their application, are of great value, otherwise valueless. It should be properly made and properly adjusted, otherwise may do more harm than good.

Plaster-of-Paris jacket is the best method for correction of scoliosis, since it remains in place and corrective pressure continually

kept up. It is worn from six to eight weeks, then new jacket is applied with still further correction; process repeated until the spine is strengthened as nearly as can be. Later, a removable jacket may be used, with postural exercises and gymnastics.

Ewerhardt applies the plaster jacket with the patient suspended on the side, the convexity up; the correction is obtained by raising or lowering the pelvis and shoulders. The slings are so arranged that torsion of the trunk may be obtained, correcting rotation still further by manual pressure, while the plaster is setting. Other methods of correction include suspending patient by the neck and arms, while procuring pressure and counter-pressure by use of fats and bandages, or rods, pads, and screws. There are, however, very few actual cures, since pressure is not applied to the spine directly, but through elastic ribs and more elastic abdomen. The lateral curve must be corrected at the same time as the rotation.

The author believes that the important point is the correction of the rotation, which is done by causing the spine to curve in the opposite direction, lessening pressure on the compressed side. The patient is placed on the face, with the back strongly hyperextended. He has been trying this method out for the past few months, and when fully perfected will report cases.

The very best treatment for lateral curvature is prevention, since postural cases frequently become structural. The postural stage should be carefully taken care of.

**HAMBRECHT, L., AND NUZUM, F. R.: A Correlated Study of the Indications for Tonsillectomy and of the Pathology and Bacteriology of the Excised Tonsils.** *Archives of Internal Medicine*, May, 1922, xxix, No. 5, p. 635.

A pathological and bacteriological study was made of the tonsils from 218 patients who had been tonsillectomized. Of these patients 63 per cent gave a history of repeated sore throats, 14 per cent of frequent colds, 8 per cent were tonsillectomized because of mouth breathing, 8 per cent for rheumatism, and 8 per cent for otitis media.

Chronic lacunar (crypt) tonsillitis was the most frequent pathologic condition found. It was present in 42 per cent. Chronic interstitial tonsillitis was present in 21 per cent, chronic peritonsillitis in 6 per cent, gross or microscopic abscesses in 10 per cent and lymphatic hyperplasia as the only change in 14 per cent. Following



repeated attacks of tonsillitis, changes in the tonsil appeared most often about the crypts (42 per cent). In tonsils from patients with a history of rheumatism, chronic interstitial tonsillitis was present in 66 per cent and chronic peritonsillitis in 33 per cent.

The organisms most frequently isolated from these tonsils were the hemolytic streptococci. They were present in 96.1 per cent of all tonsils, and were the predominating organism in 85.4 per cent. The hemolytic streptococci were further subdivided, according to the classification of Smith and Brown, into the alpha (viridans), alpha-prime and beta groups, and were present in 25 per cent, 32 per cent, and 86.1 per cent, respectively. Hemolytic streptococci were present in 96.1 per cent of the pathologic tonsils and in 28 per cent of the normal tonsils. The alpha (viridans) occurred relatively more frequently in the rheumatic than in any of the other groups of cases (18 per cent), but were absolutely less frequent in this group than the beta (54.5 per cent).

T. HOWARD.

WHITE, P. A.: *Actinomycosis; Diagnosis and Treatment. Illinois Medical Journal*, 1922, xli, 99.

In a series of 119 cases studied by Sanford and Magath, 33 per cent occurred in the states of Illinois, Iowa, Wisconsin, North Dakota, South Dakota, and Minnesota. Occurrence in cattle from a report on same, shows that 2 per cent are infected with actinomycosis in cattle killed in Chicago and also in Omaha; while 4 per cent occur in South St. Paul, and a small fraction of a per cent in other parts of the country. In the human, 80 per cent occurs in males and 60 per cent of the cases are farmers.

*Location of lesion.*—Mayo Clinic reports that of 96 cases, 14 occurred in the appendix, and 61 occurred in the head and neck region; 7 cases involved the nervous system (central).

*Diagnosis.*—Definite clinical diagnosis is very difficult if the case is seen very early and very late. The classical description of a brawny induration with bluish discoloration and multiple sinuses is seldom seen or may be hard to differentiate from old tuberculous lesions. The early cases simulate tuberculous glands, Hodgkin's disease, sarcoma, lymphosarcoma or simple phlegmons secondary to oral infections following operations. The best diagnosis is made by find-

ing little yellow bodies in the purulent discharge from an abscess or open sinus. One must not fail to test these discharges in suspicious cases. Old sinuses of the head and neck region seldom show these bodies; they are best found in newly formed areas of softening, which should be incised and the granules sought. If the lesion is acute with swelling, redness and systemic disturbance, reserve the diagnosis until localization and softening when the bodies will be found in the discharging pus. If the process is very slow in primary cases or the chronic lesions show no pus formation, a treatment with x-ray or radium will produce softening.

*Method of Examination.*—Granules may be caught on the end of a small instrument and placed on a slide with a few drops of tap water placed over and around it; roll it around in the water to wash away the pus; move to another part of the slide and crush under a cover glass. Examination under the microscope will show the characteristic daisy formation. The granules are unmistakable when found. Pathological examination of a newly-formed lesion may also show the granules. The mycelia are Gram-positive and acid fast. Work on complement fixation is still in its experimental stage.

*Treatment.*—Bevan and Ramstead favor copper salts internally and externally; while Jensen and Schery use methylene-blue internally and by injection into the tissues and the sinuses with drainage of the abscesses and x-ray treatment. Colebrook uses autogenous and polyvalent stock vaccines, draining the abscesses surgically. He believes that surgical drainage is a big factor in the cure of his patients. Heyerdahl cured several cases with radium; the abscesses formed either ruptured or were incised. Another was treated with simple incision and swabbing the abscess cavity daily with turpentine.

Stokes in a personal communication, reports the use of arsphenamin with surprisingly good results in abdominal infection; but in other systemic febrile cases he believes it will do harm. When afebrile in a patient of high resistance benefit may be obtained but it does not take the place of intensive radiotherapy and the use of the iodids.

Incision of the abscess, swabbing the cavity with iodine and packing with iodoform gauze is recommended by New, followed by application of radium; likewise oral administration of potassium iodids, beginning with 30 grains daily and increasing daily until it



reaches 200 grains daily. There should be rests of a week or two in this administration; stopping the drug if skin rashes occur or gastrointestinal disturbances supervene. Accessory pockets should be broken down by introducing the finger into the cavity at the time of operation. Radium may be used immediately or after a delay if the reaction is severe; application may be repeated in six weeks to six months if necessary.

*Prognosis.*—The patient must be told that the treatment must be long, and that there is a likelihood of abscesses forming subsequently where the infection is or cannot be thoroughly stamped out.

**GUELPA, G.: The Treatment of Diabetes and Gout by Disintoxication.**

*Proceedings of the Royal Society of Medicine, 1922, xv, 12.*

Association of prolonged fasting repeated at intervals, and copious watery purgation are employed by the author to secure a thorough cleansing of the organism; if the purge is not vigorous, disintoxication is slow and uncertain. The fasting from food is absolute, but there is free drinking of as much warm water daily as possible.

The results of this treatment are constant and surprising—most important are as follows:

“(1) An almost complete disappearance of the intestinal flora and an attenuation of the vitality of micro-organisms in other regions (for instance, the varied manifestations of staphylococci).

“(2) A regularization of the pulse and diminution of blood-pressure, increase in the number of red globules, and greater equilibrium of the leukocytes.

“(3) Reduction of the volume of the principal viscera, especially the heart and liver.

“(4) Progressive loss of body-weight which can be regulated at will.

“(5) Disappearance of pains in the joints, of muscular stiffness, and of difficulty of breathing, etc.

“(6) A sense of well-being, with greater activity and clearness of thought.”

The author cites a case of diabetes with more than 100 grains of sugar in the urine. After two days of purging and fasting, sugar disappeared. The diabetes was cured, although he died two years later from tumor of the shoulder.

There was another case of a boy, aged 16, with 1200 grains of sugar a day in 14 liters of urine. Within 15 days, the patient took two fasts of five and six days each, separated by four days of reduced diet, the sugar disappeared completely, urine was reduced to a liter, while the edema and cyanosis of the face entirely disappeared, the patient's general health being completely restored. Another very severe case was that of a doctor, who had serious diabetes for some years, with gangrene of one foot, which was treated by amputation of his leg. Later gangrene appeared in the other leg. Treatment was by disintoxication and the gangrene ceased. He soon completely recovered, but repeats the treatment every now and then as a precautionary measure. Another case of very acute gangrene, which also had 300 grams of sugar and 4 grams of albumin in the urine, was put upon this treatment. A purge was given each day for three days, and all food was stopped for the same period. The gangrene was completely arrested, the foot lost its bluish color on the second day, the sugar nearly disappeared, and albumin had dropped to two grams. A restricted diet was then allowed for three days, then the treatment was repeated. Further restricted diet brought about disappearance of the sugar in 15 days. His work was corroborated by Dr. Kellogg, who treated 267 diabetics at the "sanatorium", with striking and uniform successes by means of disintoxication.

This treatment must be carried out with the necessary energy and perseverance. The patient must submit to discipline and must not commit those errors of diet which caused the previous attacks.

The same method of disintoxication is carried out in the treatment of gout, with this exception, that in gout the food is poor in mineral matter, and hydrochloric acid is given in addition.

SCOTT, G. O., AND PEARSON, G. H. J.: **A Case of Syphilis of the Intestine.** *The American Journal of Syphilis*, April, 1922, vi, No. 2, p. 269.

A case is presented with a suggestive syphilitic history, showing symptoms of generalized abdominal pain and tenderness; severe diarrhea; with the passage of liquid stools containing mucus and pus; mild icterus; gradual emaciation and cachexia; failing memory and a persistently negative serum Wassermann. Recovery was rapid and complete as far as concerns symptoms, under antisyphilitic treat-



ment, substantiating a presumptive diagnosis of syphilitic enteritis. While the many differences from the standpoint of a scientific investigation of this case, due to the refusal of the patient to co-operate, are realized, it is believed that the rarity of the recognition of this condition during life and its arrest by antisyphilitic treatment warrant the publication of this case history.

M. M. BANOWITCH.

STONE, W. J.: **The Heart Muscle Changes in Pneumonia with Remarks on Digitalis Therapy.** *American Journal of Medical Sciences*, May, 1922, clxiii, No. 5, No. 602, p. 659.

Twelve hundred and five cases of lobar and bronchopneumonia, including 259 autopsies are studied. Two hundred and seventy-nine patients with pneumonia did not receive routine digitalis therapy, while 926 patients received full dosage of a potent standardized tincture. Among 213 patients without sepsis in pneumonia, who were not treated early by the administration of digitalis, the percentage of deaths believed to have been associated with cardiac failure was 25.8. Among 709 patients without sepsis, who were treated early by digitalis, the percentage of deaths believed to have been associated with cardiac failure was 10.7. Caution should be used in administering large doses of digitalis in any form if the patient has received digitalis during the preceding ten days. Nausea or vomiting, except when due to splanchnic congestion, should be a sign to stop the dosage, as should a decrease in the heart rate to 60 or below per minute. It should be discontinued if frequent premature contractions, definite heart block or coupled beats occur. To elderly pneumonia patients, it should be given with caution. Sepsis in pneumonia was the most serious complication. It was the most frequent cause of death in the subacute or chronic forms of the disease; that is, among those who died as late as the fourteenth day of illness or subsequently. The mortality rate of pneumonia, *not* complicated by sepsis, was 14.2 per cent, while in the series complicated by sepsis the mortality rate was 56.5 per cent. Among the causes other than sepsis responsible for death in many acute forms of the disease, cardiac-muscle failure appeared to have been a prominent factor. Right ventricle dilation was present in 39.4 per cent of lobar pneumonia autopsies, and in 36.6 per cent of broncho-pneumonia autopsies.

Evidence of inflammatory reaction in the heart muscle (parenchymatous, fatty and hyalin degeneration) was found in 79.3 per cent of the sections from 34 lobar pneumonia autopsies, and in 59.4 per cent from 37 broncho-pneumonia autopsies. The extent of these changes when considered with the right ventricle dilatation was believed to be responsible for the circulatory failure which occurred. The mechanical obstruction to the pulmonary circulation in extensive or massive consolidation was apparently a factor of great importance in producing ventricle dilatation.

A. T. MAYS.

MACKENZIE, J.: **The Nature and Significance of Heart Symptoms.**

**I. Stimuli Concerned in the Heart Beat.** *British Medical Journal*, April 1, 1922, No. 3196, p. 505.

We can recognize two main structures in the heart, concerned in its action; a conducting system, consisting of peculiar cells of two kinds, the pale filiform cells constituting the sino-auricular node, the auriculo-ventricular node, the large cells known as Purkinje cells which constitute the auriculo-ventricular bundle and are also found in the walls of the auricles and ventricles and a contracting system, consisting of the peculiar muscle cells of the walls of the auricles and ventricles. The function of the conducting system is to originate a stimulus which will excite the auricles and ventricles to contract, and to convey this stimulus by a special path. All the tissues of the conducting and contracting systems have the power of starting a contraction, but in the normally acting heart, the contraction first starts in the sino-auricular node, which discharges a stimulus, causing the auricles to contract. The stimulus passes through the auricle to the auriculo-ventricular node, which in turn discharges its stimulus. From the auriculo-ventricular node the stimulus is conveyed by the auriculo-ventricular bundle, to the ventricles, causing them to contract. The reason that all cells of the two systems do not start a contraction, is that the cells of the sino-auricular node reach the susceptible stage and "go off" earlier than the other parts of the conducting system, with the result that before these cells are ready to start off on a local stimulus they have already received a stimulus from the sino-auricular node. The starting places lower down in the conducting system become stimutable later than the sino-auricular



node, and the auriculo-ventricular bundle which receives no stimulus from above, "goes off" about 30 times a minute, but the beats which originate anywhere in the lower part of the conducting system result in a well-ordered powerful contraction of the ventricle. The normal beat takes place when all tissues have time to be completely restored. The size and force of the beat depend, within certain limits, on the rate, inasmuch as more blood will have accumulated in the ventricle and more will be expelled. The ventricular systole, when the stimulus arises in the muscle cells of the auricle is often partial and ineffective, and when it arises in the muscle cells of the ventricle, it is always ineffective. Extra systole, arising in the auricular muscle is conducted along the usual path, and the ventricular response may be smaller than the normal beat but this is merely due to the fact that it has arisen prematurely. Extrasystoles which arise in the ventricle, spread to the muscle in a different way, and the wave of contraction does not sweep through the walls of the chamber in the usual manner. As a result, from a ventricular extra-systole, we have a small beat, or the absence of a beat as detected in the radial pulse. In auricular fibrillation, it has been reasoned, that each muscle cell throws out a stimulus in its contraction, so that there is an incessant shower of stimuli thrown upon the auriculo-ventricular node. How many of these pass depends upon the susceptibility of the node, and this is estimated by the number of ventricular responses. But there is also probably a difference in the nature of the stimulus, as is shown by the action of digitalis. The slowing that takes place in auricular fibrillation is much greater than can be produced in persons with a normal rhythm. In some patients with auricular flutter digitalis speedily causes a great fall in ventricular rate, accompanied evidently with the passage of the auricular flutter into auricular fibrillation. The effect that digitalis has upon the idio-ventricular rhythm (contractions arising in the walls of the ventricle) throws a little more light, and gives further evidence that it is probably not on the conducting system that the digitalis acts. In this condition the same slowing of pulse will be noted as in auricular fibrillation. The stimuli which arise outside of the conducting system are much more sensitive to agents which favor or retard their passage than those which arise within the conducting system. This raises the probability that there are thus two types of stimuli, and while this difference ap-

pears to be largely one of strength, there is also a possibility that it is also one of quality of stimulus.

L. C. JOHNSON.

REGAN, J. C.: **The Question of the Use of Anesthesia in Lumbar Puncture.** *American Journal of Medical Sciences*, May, 1922, clxiii, No. 5, No. 602, p. 738.

The only class of patients in whom general anesthesia may be required, are those who are exceedingly delirious, the robust adult type, and the struggling. Rigidity of the back and opisthotonos unless extreme, are not an indication for general anesthetics. Contra-indications are in persons who are seriously ill, on account of the effect on blood-pressure, heart, and kidneys; also in those with atheromatous arteries; diabetes; brain tumor; and generally in children. Chloroform is the anesthetic of choice. It is rapid and requires a very small amount. Local anesthetics are rarely required in children, unless the rachientesis is performed preliminary to the administration of a spinal anesthetic. Local anesthesia impresses the patient as the human method of procedure in adults. In the delirious and excitable, or very nervous persons, two hours before the operation, morphin sulphate grain  $1/4$  (0.01620 gram), and atropin sulphate, grain  $1/120$  (0.00389 gram [adult]), is injected hypodermically. This may be supplemented, especially in cases of alcoholics, by an ounce or two of spiritus frumenti, fifteen minutes before the puncture. Ethyl chlorid is objectionable, because it hardens the skin temporarily over the site of puncture, hence it interferes with the clearly defined sensation of touch. It is unpleasant if the patient's skin or spine is hyperesthetic.

A. T. MAYS.

REES, M. H., AND OLMSTEAD, W. H.: **The Use of Pituitary Extracts by Mouth in the Treatment of Diabetes Insipidus.** *Endocrinology*, March, 1922, vi, No. 2, p. 230.

A case of diabetes insipidus was treated by giving him four 2 grain (0.130 grams) doses of posterior lobe extract, desiccated, (Armour) in capsules coated with salol. This permitted the extract to pass through the stomach undisturbed, and as good results



were obtained in controlling the polyuria and polydipsia as by intramuscular injections of pituitary extract. In the case under treatment the urine specific was as high as 1024, but when treatment was stopped the patient passed as high as 20 liters of urine a day of exceedingly low specific gravity. Giving the desiccated extract by mouth in uncoated capsules or by rectum had no control whatever over the symptoms. The possibility in this case is suggested, that the polydipsia and polyuria were due to the hypermotility of the alimentary tract, and that the pituitary extract acted either by decreasing this hypermotility and lessening the absorption of water, or caused a local vaso-constriction with the same lessened absorption. The means of giving a patient relief from his symptoms by oral administration of the pituitary extract, lessening the trouble and expense of treatment by daily injections, ought to make it possible to study some of these cases over long periods of time.

I. C. JOHNSON.

LYON, M. D.: **Prognosis in Diabetes Mellitus.** *Lancet*, May, 27, 1922, ccii, No. 5152, p. 1043.

(1) In certain cases of glycosuria the blood sugar is normal or less than normal. The author speaks of this type as the negligible glycosuria or renal diabetes.

(2) The injection of 1 c. c. of 1:1000 adrenalin increases the amount of blood sugar which may be followed by glycosuria. This may also explain the glycosurias of worry, rage, and nervousness. In these conditions Cannon has demonstrated an increased liberation of the adrenal secretion.

(3) Hyperglycemia occurs from excess ingestion (200 grams [3086.46 grains]) of glucose. This occurs in normal individuals or those suffering from exophthalmic goiter.

Diabetes results from an impairment of the power of carbohydrate assimilation. It is usually accompanied by some impairment of the pancreatic function. The prognosis depends upon the amount of pancreatic destruction and its compensatory function.

Untreated diabetes is always serious and death results from coma, starvation, pneumonia or tuberculosis. Cases after middle life are usually milder. Cases in which there is a hereditary diabetic history are usually milder. It is also less serious in the obese. Arterial

degeneration and nephritis give a more serious prognosis. Ketonuria adds to the gravity. Acute or chronic infections, add to the seriousness.

In adequately treated cases early deaths are fewer. Gangrene and skin infections are less serious. The patient's response to treatment is the best index for prognosis. Chronic cases respond slowly. Those with rapid loss of weight are more serious. Prognostic deductions cannot be drawn from the amount of sugar passed in the urine. The rise in blood sugar after a meal is important in judging the outcome. After a patient has become sugar free his future depends upon the reliability and intelligence in the carrying out of his diet.

H. JOACHIM.

KAHN, M. H.: **Reversed Rhythm of the Heart.** *Archives of Internal Medicine*, June, 1922, xxix, No. 6, p. 828.

Kahn reports the interesting case of a man of 46 who complained of some precordial pain at times, and of periods of vertigo and a feeling of choking. Electrocardiographic tracings showed at first no abnormality except an inverted T in the third lead. With vagal stimulation, by deep breathing or ocular pressure, there developed varying degrees of depressed conductivity and partial block. During one period the conduction time was prolonged to the extent of .60 of a second, the rhythm being quite regular, with the result that the auricle went into systole during the ventricular systole of the preceding cycle, the R-wave in the electrocardiogram preceding the P-wave, the latter being followed by the T. This constitutes a reversed rhythm, as distinguished from a reversed mechanism, in which an impulse of ectopic origin travels from the ventricle to the auricle, a point that the author particularly stresses. In this patient exercise also produced a partial block, with a rhythmic variation in the conduction time, so that P-R interval would gradually increase from the normal to an extreme delay (0.76 of a second in one of the tracings shown), the succeeding auricular impulse failing altogether to reach the ventricles. Amyl nitrite did not effect the conduction. 1/150 of a grain of atropin hypodermically was followed by the appearance of difficulty of conduction and partial block. It was shown



that polygraphic tracings must have been misinterpreted without the aid of the electrocardiograph.

T. HOWARD.

TUCKER, J.: **Immediate Recovery from Early Diabetes Insipidus after Lumbar Puncture. Report of a Case.** *American Journal of the Medical Sciences*, May, 1922, clxiii, No. 5, No. 602, p. 668.

Diabetes insipidus may result not only from destructive lesions of the pituitary gland, but from any cause which may obstruct the flow of the normal secretion. Such an obstruction may result from a transient edema of the pituitary gland or from an inflammation with resultant plastic exudate, or from extra pituitary conditions such as increased intracranial pressure from any cause. The withdrawal of spinal fluid tends to relieve this pressure, whether under high or low tension, and to remove the obstruction. Within twenty-four hours after lumbar puncture the great thirst was relieved, the urinary output was reduced to normal limits, and the sweating ceased. Eight cubic centimeters of clear spinal fluid was removed under normal pressure. Examination five and a half months after the onset, and no other treatment than lumbar puncture, gave negative findings.

A. T. MAYS.

ROSENOW, G., AND JAGUTTIS: **Blood Sugar in Addison's Disease and the Effect of Adrenalin** (Der Blutzucker bei Addisonscher Krankheit und seine Beeinflussung durch Adrenalin). *Klinische Wochenschrift*, February 18, 1922, p. 358 No. 8.

Porges, in 1910, first called attention to low blood sugar values in three cases of Addison's disease. He confirmed this in experimental removal of the adrenals. He thinks this a characteristic feature of adrenal disease. Eppinger, Falta and Rudinger have demonstrated a high sugar tolerance and an absence of glycosuria following injections of adrenalin. Adrenalin injections do not materially raise the blood pressure in Addison's disease. Compared to controls the blood sugar does not rise as much after adrenalin injections and takes longer (1 hour) to reach its peak. The authors have not been able to substantiate Porges's work in every case.

H. JOACHIM.

EBSTEIN, E.: **Familial Occurrence of Migraine** (Ueber das familiäre Vorkommen von Migräne). *Munchener Medizinische Wochenschrift*, February 10, 1922, lxi, No. 6, p. 199.

According to Strumpell, heredity is a relatively frequent factor in migraine. It is also a familial disease and is associated with epilepsy, hysteria and psychoses. Möbius is of the same opinion. Migraine may be a masked form of gout. It may be related to Quincke's edema, urticaria, muco-membranous colitis, bronchial asthma, etc. and may alternate with these conditions. It is often associated with an eosinophilia. Genuine migraine can be suspected if the headaches occur from early youth and if in addition there is a family history of such. Möbius thinks that heredity is a factor in 90 per cent of the cases.

H. JOACHIM.

CURSCHMANN, H.: **Chronic Endocarditis** (Ueber Endocarditis Chronicalenta). *Munchener Medizinische Wochenschrift*, March 24, 1922, lxi, No. 12, p. 419.

The author cites the case of a thirty-eight year old man who had previously had muscular rheumatism and who now complained of dyspnea and palpitation. The physical examination demonstrated a compensated aortic and mitral insufficiency. The rectal temperature was 37.8° C. (100° F.), the urine persistently contained red blood corpuscles and leukocytes. There were no foci of infection. The patient developed a secondary anemia and became progressively weaker. The spleen was palpable. Blood cultures revealed hemolytic streptococci.

Schottmüller gave the following cardinal symptoms of a bacterial endocarditis:

1. Insidious onset.
2. Development of a valvular lesion, usually aortic.
3. Large spleen.
4. Moderate fever.
5. Focal renal involvement.
6. Chronic course uninfluenced by therapy.
7. Streptococci in the blood.



The author's clinic at Rostock had 12 such cases in 1921, 11 males and 1 female. Of these cases 5 gave a previous history of articular rheumatism; 9 cases showed aortic and mitral involvement. Anemia was a prominent symptom in all the cases. Leukocytosis was absent in most of the cases. One case had a distinct leukopenia. In 11 cases blood cultures were done; in 3 cases the blood after repeated examinations was sterile, in 5 cases hemolytic streptococci, in 2 cases a streptococcus resembling the pneumococcus, in one case a streptococcus viridans was isolated.

Renal infarction was present in 11 cases. Albuminuria was absent or very faint, cutaneous or mucous membrane hemorrhages were infrequent.

Differential diagnosis includes syphilis, pernicious anemia, chlorosis, pulmonary tuberculosis, and malaria.

H. JOACHIM.

FRANK, E.: *The Syndrome of Tetany and Its Pathogenesis* (Das Tetaniesyndrom und seine Pathogenese). *Klinische Wochenschrift*, February 11, i, No. 7, p. 305.

The older authors gave as a cause of tetany, infections, intoxications, chronic diarrhea, stenosis of the pylorus and pregnancy. Recently parathyroid insufficiency has been given as a cause. Shoemakers and tailors are predisposed. Most cases occur between January and April.

Tetany may be latent and only demonstrable by irritability of motor and sensory nerves as demonstrated by Erb's phenomena. Tetany also gives pitting of the enamel of the teeth and cloudiness of the lens.

The author has been able to produce tetany by injections of dimethylguanidin. This could be prevented by simultaneous intravenous injections of calcium salt.

H. JOACHIM.

MATSON, R. C.: *Diaphragm Irregularities* (Preliminary Contribution). *The American Journal of the Medical Sciences*, June, 1922, clxiii, No. 6, No. 603, p. 826.

The assumption that tenting of the diaphragm always diagnosticates pleuro-diaphragmatic adhesions is unjustifiable. Tentings of

the diaphragm, frequently seen on plate and screen at the termination of the hili-diaphragm superficies with characteristics, which are associated with pseudo-adhesions, are purely physical phenomena brought about by two factors: (a) During inspiration the diminished elasticity or rigidity of the lower bronchial branches prevents descent of that area of the lung base in immediate relationship to the bronchus involved; thus a dimple effect is produced on the surface of the base of the lung; and (b) the diaphragm being molded to the base of the lung by a negative intrathoracic pressure is held by suction in the dimple above referred to, producing a tented appearance (pseudo-adhesions). These are commonly found during acute and chronic respiratory infection. It is reasonable to suppose that should infiltrative or proliferative changes incident to infection not halt at a point in the bronchial tree proximal to its termination, but instead, proceed to the pleura, then the diaphragm would become adherent and the pseudo-adhesion would be converted into a true adhesion.

A. T. MAYS.

LEWIS, T.: **The Value of Quinidin in Cases of Auricular Fibrillation and Methods of Studying the Clinical Reaction.** *The American Journal of the Medical Sciences*, June, 1922, clxiii, No. 6, No. 603, p. 781.

The discovery of quinidin was made possible by many investigations and experiments upon the hearts of the lower animals, and the forthcoming analyses of clinical irregularities.

The effects briefly are:—It paralyzes the action of the auricles, it wholly abolishes the regularity of the natural pulse, two effects, each of which hampers the circulation in some measure; it lifts the rate of the beating ventricle. Quinidin exerts its beneficial action in restoring the normal rhythm to hearts which have beaten irregularly for months, even years. In fibrillation the burden of the auricles is so increased that the weakly heart often finds it unendurable. The electrocardiograph provides the best method of investigation. Instead of the usually adopted leads from the limbs, Lewis leads directly from the chest wall, in the neighborhood of the right auricle. The records give an accurate measure of the ventricular rate and its variations. A single dose of quinidin, 0.8 gram (12.346 grains), swallowed enclosed in a thin gelatine capsule, induces a re-



action in one-half hour. The auricular rate falls, reaching its minimum in two hours after administration. This minimum is not maintained, and slowly rises to its previous rate in from twenty-four to thirty hours. The ventricular rate rises simultaneously with the fall of the auricular rate and gradually subsides. The alkaloid first appears in the urine, two hours after administration (Mayer's reagent), about the time of recovery of the heart's action from the drug. It is excreted for twenty-four hours. The extent of the reaction depends upon the dose. If single doses of 0.2, 0.4 and 0.6 grams (30.86, 61.73 and 92.60 grains) are given on alternate days, the falls of auricular rate increase by approximately equal increments; 0.4 grams (61.73 grains) gives less than double the fall produced by 0.2 grams (30.86 grains). The desired return to the normal rhythm occurs after very variable quantities have been administered. In some patients a single dose of 0.6 grams (92.60 grains) may produce a steep fall which ends in the abrupt cessation of fibrillation. The change is more frequently obtained by using repeated doses of 0.4 grams (61.73 grains) three or four times a day. One or more similar doses may have to be given during the night. Lewis believes that the antagonistic action of digitalis and quinidin has been exaggerated. A course of digitalis immediately before, or the simultaneous administration with quinidin, helps to keep the ventricular rate at a comparatively low level throughout the quinidin reaction. Heavier doses of quinidin in these circumstances may be required. Many of the noted undesired toxic effects are important. Giddiness, head fullness, actual headache, griping pains, diarrhea, and urticaria are often apt to occur. Palpitation, and ventricular rate rise to 120 or 160 would not contraindicate further administration. If the auricular rate fell to 240 or below it would contraindicate further dosage if the ventricular rate had already risen much above 100. Extrasystoles are not uncommon arising in the ventricle. Multiple extrasystoles is a signal to cease further quinidin. Cases with much dilatation of the heart, indicated by congestion of the veins and liver, or symptoms or signs of recent embolism contraindicate the drug. In Lewis's series of cases, in which there was resumption of normal rhythm, no cases of embolism were noted. Approximately fifty per cent of cases are restored to normal rhythm. The benefit is most felt after the patient is up and about again, undertaking his daily duties. Quinidin treatment differs from digitalis in that it

frees the patient from further drug treatment. In not a few patients the normal rhythm lasts but a few days or a week, in some for weeks or months, and a few have been observed where the effects lasted for six months or a year. Quinidin has taught us that the hearts displaying a chronic auricular fibrillation are capable of returning to the normal rhythm, a quality hitherto in doubt. Investigations should be made only under strictly controlled conditions; treatment should be controlled in the wards rather than in an out-patient department.

A. T. MAYS.

MCLESTER, J. S.: **The Influence of Rigid Salt Restriction in the Diet for Chronic Nephritis.** *The American Journal of the Medical Sciences*, June, 1922, clxiii, No. 6, No. 603, p. 794.

Ten cases of chronic nephritis are reported all having hypertension, albumin and casts. One or two weeks upon a salt-free diet with a variable interim of salt-poor food, and then a second salt-free period was the procedure. The salt-poor diet was the usual low caloric nephritic diet, with no addition of salt to the food after it reached the table. It contained approximately 2 grams (30.86 grains) of sodium chlorid. The salt-free diet contained less than 1 gram (15.43 grains) of sodium chlorid, consisting of bread and other foods, cooked without the addition of salt. The patients found the foods unappetizing and therefore ate but little. The blood urea showed a tendency to increase. The blood chlorids, irrespective of diet, varied but little, while the urine chlorids, reflecting the degree of the patient's adherence to the diet, fell to a very low figure. The systolic pressure, as a rule, showed a moderate fall. This was never marked. In two of the patients there developed weakness and prostration to a distressing degree. One of the patients suddenly experienced retinal hemorrhages and other fundus changes at the end of two weeks of this diet. The author concludes that almost complete elimination of chlorid from the diet of a nephritic with hypertension accomplishes little if anything more than does the salt-poor diet ordinarily prescribed.

A. T. MAYS.



KAHN, M. H.: **Aneurysm of the Left Ventricle.** *The American Journal of the Medical Sciences*, June, 1922, clxiii, No. 6, No. 603, p. 839.

Two cases are presented. The left ventricle is the most common of the heart chambers to become involved by an aneurysm. Its usual site is the apex, or in the anterior wall immediately above it. The anterior or descending branch of the left coronary is then the one involved. The clinical features of special significance are severe precordial apical pain and the precordial adhesions localized at this region; also gallop rhythm, grave and rapid development of cardiac failure symptoms, without sufficient endocardial or cardio-renal cause. One case was a man aged 50. His symptoms dated one month before hospital admission. He had a mitral and relative tricuspid regurgitation; cardiac failure; pulsation of the liver; right hydrothorax; and nodal premature beats. Electrocardiographic tracings showed the Q-R-S group widened and notched. The T-wave was inverted in lead I, and continued from the S-phase without any isoelectric interval. The T-wave became less distinct and isoelectric in leads II and III. Autopsy showed the aneurysm and a calcareous deposit in the left coronary. The second case was a female aged 46. Onset of illness was one month. Symptoms were sudden, continuous, sticking precordial pain, dyspnea, palpitation, cyanosis and rusty sputum. She died in five months. The Q-R-S wave was widened, thickened and notched; left predominance. The T-wave inverted in lead I and fell directly from the descending arm of R, later it became isoelectric. Autopsy showed pericardial adhesions, aneurysm of left ventricle and occlusion of the anterior descending branch of the left coronary artery.

A. T. MAYB.

FARNAM, L. W.: **Pancreatitis Following Mumps? Report of a Case with Operation.** *American Journal of Medical Sciences*, June, 1922, clxiii, No. 6, No. 603, p. 859.

The patient was an Italian man, twenty-three years of age. Two weeks previous to his abdominal operation he had parotitis. The abdominal symptoms presented a picture of acute pancreatitis. A swollen, acutely inflamed pancreas, with a large quantity of peritoneal

exudate was found. Drains were placed to the pancreas and to the flanks, and the abdomen closed. The patient's further course in the hospital was complicated by a bronchopneumonia, and the development of a pelvic abscess, which was drained four weeks following the original operation. The organism isolated from the peritoneal exudate was the streptococcus viridans. A stool examination the day after operation showed no free fat or starch, and on three subsequent occasions was normal. No trypsin was found in the peritoneal exudate. The patient left the hospital in good condition. Pancreatitis is an occasional and usually unimportant complication of epidemic parotitis. Rarely it becomes fulminating and requires operative treatment.

A. T. MAYS.

PATTERSON, H. A.: **Experiences with Hookworm.** *The Military Surgeon*, May, 1922, 1, No. 5, p. 562.

The author discusses the importance of the recognition of hookworm in regions where it is of sporadic occurrence and in view of its great prevalence in the extreme south. He says that since the investigations of Stiles in 1901 there is no longer any doubt that there are two kindred varieties of this parasite. The first type is common to Southern Europe and Egypt and long recognized as the cause of the extremely impoverished condition of the blood and that this parasite is known under a great many names, the three most common being Old World hookworm, European hookworm, *ancylostoma duodenal*. The other parasite is found throughout southern United States and the West Indies and is commonly known as the American or New World hookworm and *uncinaria Americana*. Stiles observed that there was sufficient structural difference to justify the recognition of the American worm as a separate species. Human infection with this organism is known as *uncinariasis* or *ancylostomiasis*. The seat of the infection in man is the small intestine, duodenum, jejunum and the upper part of the ileum where as many as a thousand worms have been found in one individual, although the average number rarely exceeds a few hundred. They do not multiply in the bowel, but individual worms may retain their residence for as long as five years. In the intestines, however, they do produce and liberate, into the lumen of the gut, eggs which are then pass-



ed out of the alimentary canal by evacuation of the bowels. These ova pass out with the feces and, under favorable conditions of temperature and moisture, develop an embryo which hatches within a few days. The resulting larvae pass through a state of development in the warm moist earth, growing to the length of 0.5 to 0.6 mm., and moulting twice. They are now ready to infest a new host.

The greater frequency of this infection in some of the southern states is due to the economic and social conditions that prevail there. Lack of personal hygiene and more or less absolute filth exists. The negroes and many of the so-called "poor whites" go about barefooted; and, further, because of the distance between houses, indolent tendencies and lack of proper training, defecate at their convenience and inclination.

The organism when in the infecting stage enters the body of the host by penetrating the thin, soft skin between the toes, giving rise to an inflammatory condition known as "ground itch". After penetrating the armour of the skin the infecting parasite probably follows the route described by Loos. The larvae are first carried by the lymph and blood to the lungs, where they are filtered out by the capillaries of these organs, penetrate into the pulmonary alveoli, pass up the bronchi, and finally get into the sputum and are coughed up. They are then swallowed, and the parasite thus reaches the intestinal tract where the adult worm attaches itself to the mucosa. The female then produces a great number of eggs which are discharged in the feces of the newly infected individual so perpetuating the vicious circle.

The mode of diagnosis consists in the examination of the stool of the suspected individual for ova. The author then gives a number of methods.

The treatment consists of giving the infected individual a dose of epsom salts early in the afternoon after the noonday meal. For supper he was given a thin broth and an hour later another dose of epsom salts. At eight o'clock the next morning another dose of epsom salts, followed in two hours by a dose of 1 c. c. (.610280 cu. in.) of oil of chenopodium. One hour after the latter dose a dose of castor oil was given. At the end of a week the stools were reexamined. About 80 per cent were found negative. Mention is also made of the use of carbon tetrachlorid as an anthelmintic.

F. SCHROEDER.

BOAS, E. P.: **The Nature of the So-Called "Capillary Pulse".** *Archives of Internal Medicine*, June, 1922, xxix, No. 6, p. 763.

In the course of a study of the capillary morphology and blood-pressure by means of Danzer and Hooker's technic, Boas encountered a number of patients who presented the clinical phenomenon of the so-called "capillary pulse", and took this opportunity of making some observations on the subject. The method is based on Lombard's demonstration that the capillaries in the skin may be clearly seen when the finger is placed on the stage of a microscope, and examined by means of a magnification of 40 to 80 diameters, a drop of castor oil having been placed on the finger just above the nail bed, and illumination secured by focusing the light from an electric bulb directly on the point examined with a condenser. With this direct method of observation of the capillary bed in eleven patients who showed a capillary pulse, Boas came to the conclusion that the capillaries under these circumstances do not pulsate at all, but that the phenomenon is due to an exaggerated pulsation of the arterioles and possibly of the venules of the subpapillary plexus of the skin. The throbbing of the finger throws the field a little out of focus with each pulse beat and the author believes that this has misled some observers into thinking that they saw the capillaries pulsate. He suggests that it would be more satisfactory and accurate to speak of the phenomenon as "systolic flushing of the skin".

T. HOWARD.

RITCHEY, J. O.: **Febrile Stages in Chronic Nephritis: Their Significance as Observed by Functional Renal Tests.** *American Journal of Medical Sciences*, June, 1922, clxiii, No. 6, No. 603, p. 882.

During febrile elevations, due either to infection or some other agent, the author has observed that there is a noticeable and oftentimes measurable depression in renal function. A great majority of all cases of chronic nephritis manifest temperature elevations at times throughout the course, especially in the acute stages. In chronic nephritis, fever with an associated increase in albuminuria shows an added acute process. While function is not consistently depressed in acute infections, it is found to be so during febrile reactions in the cases of chronic nephritis. In chronic nephritis as shown by fever



with simultaneous untoward clinical symptoms and functional impairment as measured by phthalein excretion, urea and creatinin retention and signs of renal irritation as determined by albuminuria and sediment increase, there are superimposed acute processes. The clinical findings of six cases, checked in two cases by autopsy findings, would suggest that the course of chronic nephritis is determined by these added acute processes and that the prognosis depends in a large measure upon their cessation or continuation.

A. T. MAYS.

PUNCH, A. L., AND GOSSE, A. H.: **The Value of the Complement Fixation Test in the Exclusion of Active Pulmonary Tuberculosis.** *British Medical Journal*, April 1, 1922, No. 3196, p. 509.

According to the method of performing the complement fixation test as a means of diagnosis in pulmonary tuberculosis, as previously outlined by Punch, a positive result has been obtained in at least 98 per cent of cases of definite pulmonary tuberculosis, the criterion being the demonstration of the bacillus in the sputum. Of the five of these 260 cases giving a negative result, three of them later gave a positive finding. Of 140 presumably healthy individuals or patients suffering from non-tuberculous diseases, three gave a positive result. Of these three, one had enlarged glands of the neck and another probably had pulmonary tuberculosis at a later period. In only one case could no sign or evidence of tuberculosis be found. Of this last group, those with negative fixation tests, many of them had a clinical condition which strongly suggested tuberculosis, cough, sputum, often blood-streaked, loss of weight, pyrexia, and pain in the chest. An unselected fifty of the cases were followed ten to twenty months later, and showed reactions still negative, in all but one case, and this one had been in contact with tuberculosis after his first test. The absence of the development of any more definite evidence of tuberculous infection in the others, appears to offer striking evidence in favor of the accuracy of the test as here employed.

L. C. JOHNSON.

WOOD, G. B.: **The Use of the Electric Cautery in Laryngeal Tuberculosis.** *The American Journal of the Medical Sciences*, June, 1922, cxliii, No. 6, No. 603, p. 854.

Cauterization by the electric knife or needle produces a distinct zone of inflammatory reaction around the area of destruction; an

eschar is formed, and granulation tissue is developed. Cauterization should always be performed under local anesthesia. Cocain solution is swabbed on the larynx. No violent reaction has ever followed the author's technic. Soreness persists from twenty-four to forty-eight hours. The repetition of the cauterization should not be undertaken until the previous one has healed, unless an entirely new area of the larynx needs to be treated.

A. T. MAYS.

MACKENZIE, J.: **The Nature and Significance of Heart Symptoms: The Reflex Process and the Heart Beat.** *British Medical Journal* April 8, 1922, No. 3197, p. 551.

The parts concerned in a reflex, are the stimulus, the cells receiving the stimulus, the cells concerned in the conduction of the stimulus, and the cells which respond and produce an effect. The meaning which we attach to the term "reflex" is, that vital process by which a stimulus passes from one tissue or organ to another, resulting in a response. This makes no mention of the manner by which the stimulus is conveyed from the receptor cells to the effector cells. Hitherto it has been assumed to be by nerves, but nerves are not necessary to the process, for other tissues may convey the stimulus. In the different rhythms of the heart, we find variations in the reflex process. In certain abnormal conditions the muscle cells of the auricle and ventricle may contract independently of the control of the normal mechanism. The contraction of one cell stimulates its neighbor to contraction as in fibrillation. In this condition the muscle wall, though as a whole it stands still, is seen to be in continuous movement on account of the inharmonious contractions of the individual muscle cells. The stimulus evoked by one cell passes directly to another, in the same manner as in the lowest form of nervous mechanism. If a portion of the normal conducting path be destroyed, the auriculo-ventricular bundle, the ventricle contracts at a slower rate than the auricle. There is good reason for believing that the stimulus arises in the Purkinje cells in the remainder of the bundle and is conveyed by them to the ventricle. The mechanism concerned in regulating the heart beat, then, belongs to the vital process included under the term "reflex", and the cells taking part belong to two groups; an extrinsic, connected to the nervous system by the vagus



and sympathetic nerves; and an intrinsic, which includes the sino-auricular and the auriculo-ventricular nodes, and the Purkinje cells in the bundle and the auricles and ventricles. Agents of diseases (toxins) which modify the rate and rhythm act on different parts of the mechanism, and certain disease agents produce characteristic effects. Drugs act also in the same way, and as they both act on the same structures, the effects of drugs will be affected by the effects of toxins. The kind of knowledge which disturbances of the reflex process reveals is limited to the variations in rate and rhythm, and they give no information regarding the functional efficiency of the heart. Heart failure may be defined as the condition in which the heart is unable to maintain an efficient circulation when called upon to meet the efforts necessary to the daily life of the individual. This definition is made wide, and includes conditions of extreme failure as well as those where the failure is beginning. Most cardiac symptoms can be arranged in four groups, according to the structures which give rise to the symptoms: symptoms due to lesions of the valves; symptoms due to alteration in rate and rhythm; symptoms due to alteration in the size and shape of the heart; symptoms due to an inefficient output of blood from the heart. The first three groups of symptoms, modified sounds, abnormal rhythms and alterations in size and shape of the heart, do not give evidence of the functional efficiency of the heart, but they have been so long associated with heart failure, that they have come to be looked upon as evidence of heart failure. It may be said that signs revealed by the physical examination of the heart or by instruments do not give this kind of information. Respiratory distress in response to effort is often the earliest sign of heart failure. When the heart muscle itself receives an insufficient supply of blood, as by blocking of the coronary artery, or exhaustion, we often get pain as the earliest sign of this type of heart failure. In heart failure the process concerned is an insufficient supply of blood, and each organ which receives an insufficient supply will show symptoms peculiar to its impaired function. In the early stages symptoms will occur only when the heart is called upon to exercise its full powers; the early symptoms will only be produced during some physical effort. This limitation of the field of response to effort is revealed by sensations of distress. When symptoms of heart failure persist when the patient is at rest (dropsy, enlarged liver, and orthopnea) the reserve force of the heart is exhausted and the

rest force is being encroached upon. The symptoms of heart failure, again, are not to be found by the examination of the heart.

L. C. JOHNSON.

McKEAN, R. M.; **Lowered Vital Capacity of the Lungs in a Case of Primary Hepatic Tumor with Pulmonary Metastases.** *American Journal of the Medical Sciences*, May, 1922, clxiii, No. 5, No. 602, p. 710.

The case is one of primary carcinoma of the right lobe of the liver originating in the epithelium of the intrahepatic bile ducts. Metastases are demonstrated in the liver substance, in glands at the lung hila, in the kidney, and seeded throughout the parenchyma, pleurae and blood-vessels of both lungs. Numerous thrombi were found in the hepatic veins. The classical features of a tumor of this type were lacking, *i. e.*, pain in the right upper abdominal quadrant, jaundice, ascites and edema. The pulmonary symptoms, thoracic pain, dyspnea and hemoptysis, led to the patient's entrance into the hospital and dominated the picture throughout, producing the most interesting phase of the case, the marked reduction in vital capacity, as compared with the relative insignificance of the pulmonary signs. The change in vital capacity furnished the first real evidence of the extent of the progress of the intrathoracic process, which later was demonstrated at autopsy.

A. T. MAYS.

WARWICK, M.: **Focal Embolic Glomerulonephritis.** *The Journal of Laboratory and Clinical Medicine*, June, 1922, vii, No. 9, p. 507.

During the last two decades medical investigators have given renewed attention to the subject of nephritis, particularly in respect to its etiology and classification. However, one very important type of the disease, *viz.*, focal embolic glomerulonephritis, has received but very little attention. This may be due to the fact that these cases are relatively rare, and are not always carefully studied and even then are not recognized as a distinct pathologic entity but are classed as examples of diffuse glomerulonephritis.

The lesion which is usually prominent and easily recognized by the trained observer, consists of an involvement of some loops of some



of the glomerular tufts while the remaining loops and glomeruli remain entirely normal. A rather characteristic feature is that various stages of the lesion appear in neighboring glomeruli or even adjoining loops of the same glomerulus. Therefore it presents a sharp contrast to the usual glomerulo-nephritis where practically all the glomeruli present throughout the tuft the same stage of the same lesion.

The author concludes that focal embolic glomerulonephritis is a definite clinical and pathological entity. It is usually associated with an endocarditis which, however, has no characteristic appearance and it is even possible to have the kidney lesion without any endocarditis being present. It is usually caused by a streptococcus viridans but may be produced as well by the streptococcus hemolyticus. The lesions in the kidney probably depend for their character upon a bacterium of low grade virulence rather than upon any definite type of organism. The streptococcus viridans, being naturally of low grade virulence, is the most common offender. It is possible that lesions may be formed as the result of a mechanical closure or infarction of the glomerular loop and not be dependent upon the presence of living bacteria. The only positive clinical findings are the enlarged spleen and persistence of microscopic blood in the urine, associated with subacute bacterial endocarditis. The phenolsulphon-phthalein test results vary widely with the number and part of the glomeruli affected, at times giving only a trace, at others closely approximating normal.

C. M. ANDERSON.

BELL, E. T., AND HARTZELL, T. B.: **The Etiology and Development of Glomerulonephritis.** *Archives of Internal Medicine*, June, 1922, xxix, 768.

The kidneys were sectioned and studied in a series of about 3,300 consecutive autopsies, and from this material sixty-six cases of glomerulonephritis collected. The clinical histories were then studied and correlated with the pathological findings, the diagnosis resting always upon the microscopical picture. Abstracts of these histories and the pathological data are presented, the whole series being classified as to the stage of the disease. Thirty-two cases of acute glomerulonephritis are included, many of the patients having died of causes

other than renal, so that some very early stages of the disease were found. While a study of the more advanced cases brought out the fact that in most of the patients suffering from chronic nephritis the origin of the disease had been insidious rather than acute, enough intermediary cases were encountered to convince the authors that the features common to them all actually indicated that all types were but different features of one disease. These features were evidence of inflammation, exudation and proliferation, occurring in the glomeruli, and in their opinion, were always due to infection, the acute cases being usually of streptococcal origin. In observing some acute degenerative lesions—instances of nephrosis—the authors found intracapsular hemorrhages which they attributed to degenerative changes in the tufts. Thus, they thought that an acute hemorrhagic nephropathy might readily be mistaken for an acute nephritis, when it was in reality merely a degeneration. They suggest that Hill's figures illustrating the remarkably good outlook in the care of the acute hemorrhagic nephritis of children (*J. A. M. A.*, 1919, lxxiii, 1747), may be due to this misapprehension.

Glomerular lesions in chronic kidneys are described as corresponding to the healed lesion of the acute variety, or to partially healed damaged glomeruli. Many of the glomeruli are completely destroyed and most of the remainder are partially destroyed so that the kidney function is carried on by a diminished number of damaged glomeruli. They believe that the progressive nature of the disease is accounted for at least in part, by recurring infections. Evidence of this is found in the presence of acute inflammatory changes in old scarred kidneys. They reiterate their belief that all forms of glomerulonephritis are due directly to bacterial invasion of the glomeruli.

T. HOWARD.

**McNEE, J. W.:** The Use of the van den Bergh Test in the Differentiation of Obstructive From Other Types of Jaundice. *British Medical Journal*, May 6, 1922, No. 3201, p. 715.

The chief clinical value of the test is that by its use, jaundice due to obstruction in the main bile ducts by carcinoma, hepatic cirrhosis, obstruction in the portal fissure, or stone in the common gall duct, can be clearly differentiated from jaundice of hemolytic origin or due to functional derangement of the liver cells. For the test as



ordinarily carried out, about 3 c. c. of serum may be required. The blood is taken from a vein, allowed to clot, and the separated serum removed by a pipette. To 1 c. c. of the serum in an ordinary test tube, 0.25 to 1 c. c. of freshly prepared Ehrlich's diazo reagent is added, and one of three events may occur:

(1) An immediate (direct) reaction, beginning instantly, and which is maximal in ten to thirty seconds, the color reaction obtained being a bluish violet, in intensity, depending upon the amount of bilirubin present.

(2) A delayed reaction, which begins only after one to fifteen minutes, or even longer, and consists in the development of a reddish coloration, which gradually deepens and becomes more violet.

(3) A bi-phasic reaction, in which a slight reddish color appears immediately (ten to thirty seconds), which after a minute or much longer time is seen to deepen gradually and become more violet.

If the reaction is immediate or direct, an obstructive jaundice is indicated. If a direct or immediate reaction is not obtained, proceed as follows: to 1 c. c. of serum add 2 c. c. of 96 per cent alcohol, in a centrifuge tube; centrifuge, and to 1 c. c. of the supernatant fluid, add 0.5 c. c. of alcohol, and 0.25 c. c. of the diazo reagent. A violet red color is then obtained if bilirubin be present, which is of maximal intensity, almost at once. This indirect or alcohol reaction indicates that the jaundice is either hemolytic or dependent upon some functional disturbance of the liver cells. All directly positive specimens will give an indirect reaction. The difference in reaction of the bilirubin appears to depend upon the fact that the bilirubin differs molecularly in the two conditions, and van den Berg suggests that in the indirect reaction, that the bilirubin is in some way bound to an albuminoid substance, and the union is only broken down by time or by alcoholic precipitation. The bi-phasic reaction would appear to depend upon the presence of both types of bilirubin in different proportions. The indirect test lends itself easily to quantitative determinations. The test should be confirmed by further work before it is considered absolute.

L. C. JOHNSON.

SMITH, A. N.: **Complement Fixation Reaction in Tuberculosis.** *Edinburgh Medical Journal*, May, 1922, No. 5, p. 185.

The author values the complement fixation test as a diagnostic procedure in tuberculosis as follows:

In a clinically suspicious case a positive complement fixation reaction is strong presumptive evidence of tuberculosis. A positive reaction denotes activity of lesion in a clinically tuberculous patient. A single negative is of no value in a clinically suspicious case. Repeated negatives would indicate either the absence of a lesion or the inactivity of a previously active lesion. The reaction was sometimes found negative in far advanced cases in which death was imminent. A positive reaction was usually found when tubercle bacilli were present in the sputum. The intensity of the reaction seems to bear no relation to the patient's power of resistance or to the degree of severity of the infection. Non-specific fixations may occur, notably when the serum gives a positive Wassermann reaction.

DE F. LAYTON.

DULANEY, A. D.: **Non-specific Cross-fixation of Complement with Wasserman and Tuberculosis Antigens.** *American Review of Tuberculosis*, May, 1922, vi, No. 3, p. 192.

Eight of the 100 sera from known tuberculosis patients, who gave neither a history nor clinical evidence of syphilis, yielded positive Wassermans with colesterinized antigens. Of these, 2 sera gave a positive fixation with alcoholic antigen. The others were negative. Of the 500 sera received for routine Wassermann test, 23 sera giving positive Wassermans also gave fixations with tuberculosis antigen, while 20 Wassermann negative sera gave positive tuberculosis complement fixations. The 23 sera giving fixations with both Wassermann and tuberculosis antigens represented 3 active tuberculosis cases, 2 suspected tuberculosis cases, 15 persons with neither history nor clinical evidence of tuberculosis, and 3, no histories obtainable.

Of 20 sera giving negative Wassermann but positive tuberculosis complement fixations 7 were from active tuberculosis cases, 5 from suspected or treated syphilitic cases giving neither history nor evidence of tuberculosis, 7 from persons giving neither history nor evidence of tuberculosis, and one from a case in which no history obtained. Ten per cent of "normal" persons, giving a positive Wassermann, also gave a fixation with tuberculosis antigen. Three per cent of "normal" persons giving a negative Wassermann gave a fixation with tuberculosis antigen. Five per cent of the 500 sera gave fixations with tuberculosis antigen when there was no history or



clinical evidence of tuberculosis. Our results tend to show that a positive tuberculosis complement fixation in the great majority of cases indicates an active tuberculosis. In the case of "normal" persons who give a fixation with tuberculosis antigen, there is always a possibility of an old or latent infection. The sera from known tuberculous cases, giving positive Wassermanns without history or clinical evidence of syphilis, are regarded as cases of nonspecific cross-fixation. When only a cholesterinized antigen is used, a positive Wassermann in active tuberculosis is not to be accepted without thorough investigation.

C. A. SCHMID.

RENSHAW, A., AND FAIRBROTHER, T. H.: **The Etiology and Treatment of Diabetes.** *British Medical Journal*, April 29, 1922, No. 3200, p. 674.

In the consideration of the pathology of diabetes, very little is known concerning the source of the acetone bodies, but the generally accepted view is that these bodies are derived from the amino acids, from the protein molecule, from the fats of the tissues, or even from carbohydrates, but the tendency is rather to explain their origin from the oxybutyric acid derived from fats. Bacteria capable of producing acetone from starch or other carbohydrates have been known to exist for sometime, and it is likely that there exists a family of these bacteria which has been called "Amylobacter". In each of five cases of diabetes the authors isolated from the stools an organism capable of producing acetone, N. butyl alcohol, beta oxybutyric acid, and diacetic acid. Further, an analysis of the stools of these patients has yielded acetone. The organism isolated is a Gram-positive, rod-shaped bacillus, and is a facultative spore-forming anaërobe. The name *bacillus amyloclasticus intestinalis* is suggested for the organism as found in the intestine of man. By the activity of the organisms, proteolytic and diastatic enzymes are liberated. The latter splits up starch; the former is manifest by the slight liquefaction of gelatin. It appears probable that the products of such fermentation in the alimentary tract might upset the glycogenic function of the liver, resulting in the excessive accumulation of glucose in the blood with a consequent overflow elimination by the kidneys as soon as the blood sugar content became too high. The degradation of the complex

starch molecule probably occurs by the formation of fatty with large molecules, and then successive oxidation of two carbon atoms at a time, starting in the beta carbon atom. Ultimately, through the stage of intermediate fatty acids the four-carbon fatty acid, butyric acid, will be arrived at. Oxidation will proceed normally at the beta carbon atom, producing beta oxybutyric acid. This is capable of further oxidation at the same point to acetoacetic acid, and this will be ultimately broken up, giving acetone, and  $\text{CO}_2$ . In endeavoring to obtain good yields of acetone, in media, the inhibitory effects of some bacteria came to be recognized. It appears probable that they might be of value in treatment, in addition to a diet composed of such foods as cannot be utilized by the amylobacter, and the use of intestinal antiseptics.

L. C. JOHNSON.

MORAWITZ, P.: **The Indications for Splenectomy** (Ueber die Indikationen der Milzexstirpation). *Klinische Wochenschrift*, April 15, 1922, i, No. 16, p. 769.

The spleen is the grave-yard for dying blood-cells in the circulation. It also secretes a hemolytic substance which destroys red blood-cells. Toluylendiamin increases the hemolytic action of the spleen. In splenectomized animals it produces no icterus. After splenectomy the osmotic resistance of the red blood-cells is increased. Blood platelets are probably also destroyed by the spleen since they increase in number after splenectomy. The spleen probably inhibits the action of the bone marrow.

The reticulo-endothelial structure of the spleen occurs in the liver (Kupfer cells) and hemolymph glands. After splenectomy these structures increase. The results of splenectomy are therefore not permanent for this reason. It is indicated in chronic hemolytic icterus. The results are usually permanent. In pernicious anemia remissions may be lengthened in duration. Eysenburgh reports a case living five years after splenectomy. Good results have been obtained in morbus maculosus (Thrombopenia). It is indicated in Banti's disease, cirrhosis of the liver, Gaucher's spleen and thrombo-phlebitis of the splenic vein.

H. JOACHIM.



Riggs, H. W.: **Intestinal Obstruction.** *The Canadian Medical Association Journal*, June, 1922, No. 6, p. 390.

Intestinal obstruction continues to be the *bête-noir* of the medical profession, as its mortality still remains exceedingly high. The author submits figures from an open hospital, where the men attending are at least of average medical intelligence:

SERIES OF 31 CASES  
(Sex: Males 24; females 9)

Cause of Obstruction	Number	Ultimate Results	
		Recovered	Died
Not stated	4	—	4
Intussusception	5	3	2
Bands primary	3	—	3
Bands secondary to operation	6	2	4
Volvulus	1	—	1
Hernia Strangulated	12	8	4
Mortality without operation	4	3	1 (25%)
Mortality operative cases	27	12	15 (55.5%)
Days intervening between onset and operation		Fatal Cases	Recovered
		3½ days	1 5/6 days

McGlanan in 1915 published a series of 276 cases with a mortality of 45 per cent and Finney in 1920 a series of 245 cases in which 217 were operated on with a mortality of 36 per cent. These include chronic obstruction as well and cannot be fairly compared with the percentages given in this series, which are of the acute type.

In analyzing these figures one is struck by several points:

(1) That of all bowel obstructions the safest is strangulated hernia with 66 per cent recovery.

(2) The time intervening between onset of symptoms and operation is most important. Evidently it is early diagnosis of the visible and palpable form of obstruction, and the later diagnosis of the invisible, which determines the mortality. Early, because the trouble can be seen and felt by the physician or surgeon and is treated as an

emergency operation; while in later cases much time is wasted in endeavoring to prove by purgatives and enemata, that an obstruction exists. Apparently early diagnosis and treatment will save many, otherwise doomed to die. The author thinks there is a pathognomonic syndrome, by which a reasonably correct diagnosis should be made: (a) The history is usually sudden attack of abdominal pain, either spasmodic or a steady undertone pain with spasmodic exacerbations; this is accompanied by vomiting and is followed by slight relief; (b) the abdomen is soft; temperature and pulse normal; and (c) palpation of the abdomen may elicit tenderness and occasionally the patient may point out the spot of obstruction—such is the early picture of obstruction; as time passes on the abdomen becomes distended—acute pain ceases, only a steady ache remains; vomiting has become a regurgitation; patient is more comfortable in a way, but feels extremely sick; temperature remains normal, pulse may increase in rate and decrease in tension.

(3) The terminal stage is characterized by distention, regurgitation of vile smelling brown fluid, absence of pain, a weak thready pulse, parched tongue and general mental indifference to surroundings; in other words the final stage of intoxication.

Inasmuch as the small bowel is by far the most frequent site of obstruction, a bowel movement may be obtained from the colon by an enemata, and if misinterpreted diagnosis will be missed and a fatal issue ensue.

*Recapitulation.*—(1) The syndrome of sudden onset, especially after a meal or exertion with waves of pain coming to a climax and accompanied by vomiting, followed by relief, lax and nondistended abdomen, and normal pulse and temperature is pathognomonic.

(2) Valuable time is lost in trying to make a diagnosis by enemata.

(3) Early cases need only the relief of the obstruction.

(4) Late cases require enterostomy and relief of obstruction.

(5) Strangulation of bowel by interfering with blood supply increases the toxicity and the operative risk.

(6) Dehydration and toxicity must be overcome by subcutaneous or intravenous saline, preferably containing glucose.



FOLIN, O., AND NERGLUND, H.: **A Colorimetric Method for the Determination of Sugar in Normal Human Urine.** *Journal Biological Chemistry*, 1922, li, 209-211.

The colorimetric principle underlying the method of Folin and Wu (*Jour. Biol. Chem.*, 1920, xli, 367) for the determination of sugar in blood should prove equally useful for the determination of sugar in normal urines provided that a suitable process could be found for removing substances which can interfere. The practicability of the process would necessarily depend on the preliminary treatment required for the removal of creatinin, uric acid, and other materials which might have considerable reducing power.

The process is as follows: To 5 c. c. of urine add 5 c. c. tenth normal sulphuric acid and 10 c. c. of water. Add 1.5 gram (16.2 grains) of Lloyd's reagent and shake gently for 2 minutes. Filter 2 c. c. of the filtrate are the usual amount used for the sugar determination. The above mentioned dilutions are for concentrated urines. With more dilute ones, one takes 10 or 15 c. c. and reduces the amount of water taken.

The shaking with Lloyd's reagent should not be continued longer than 2 minutes because the reagent is gradually dissolved by the acid and because longer shaking does not take out any more. The dissolved aluminate from the reagent does not disturb the determination at any stage.

The colorimetric determination of the sugar in the filtrate is made in exactly the same manner as in the case of blood filtrates. For the determination of the total sugar we hydrolyze as follows: To 10 c. c. of the filtrate obtained after shaking with Lloyd's reagent add 1 c. c. of 10 per cent hydrochloric acid and heat in boiling water for seventy-five minutes. This heating should be done in test-tubes graduated at 20 c. c.—for purposes of subsequent dilution. After hydrolysis, cool thoroughly and neutralize with normal sodium hydroxid. Phenolphthalein may be used as indicator, if desired, but is not necessary as the cloud produced from the material dissolved out of Lloyd's reagent furnishes an adequate indicator of the degree of neutrality required. Add the alkali until the cloud so formed does not disappear on shaking. Dilute the neutralized hydrolysate to the 20 c. c. mark. Then add a small pinch of Lloyd's reagent and invert half a dozen times. This is for the purpose of removing

most of the coloring matter formed during the hydrolysis, 2 c. c. of this more dilute filtrate are usually a suitable amount to take for this determination also.

The standard sugar solutions to be used are the same as for the blood; namely, such as contain 1 and 2 mg. of glucose per 10 c. c. It is a common experience that whereas moderately concentrated sugar solutions can easily be preserved the dilute ones of deteriorate. It may be suspected that the cause for this deterioration is alkali given off from the containers rather than destruction by microorganisms. At all events it has been found that the dilute as well as the concentrated solutions keep perfectly in 0.3 per cent of benzoic acid and the original stock solution has been made containing 1 per cent glucose by means of 0.3 per cent benzoic acid solution. The same benzoic acid solution is then used, instead of water, for the preparation of the dilute standard solutions.

**WARTHIN, A. S.: The Occurrence of *Entamæba Histolytica* with Tissue Lesions in the Testis and Epididymis in Chronic Dysentery.**  
*Journal of Infectious Diseases*, June, 1922, xxx, No. 6, p. 559.

This case presents the unique occurrence of the metastasis of *Entamæba histolytica* to the epididymis and testis with definite though slight local lesions in these organs, in a patient affected for many years with amœbic dysentery, at the time of death nearly completely healed, with disappearance of amœbas from the stools. It is the first recorded instance of such a localization of *Entamæba histolytica*, and presents additional evidence of the mildly pathogenic character of this parasite, in the slight tissue destruction caused by it and its phagocytosis of red blood-cells and spermatozoa. A point of some interest is the localization of the small lesions in the rete testis and *tubuli efferentes*, with long streaming clots extending upward with the epididymis, the amœbas being held within these clots. In the dilated semen-filled portions of the epididymis the organisms were found in greater numbers and free in the semen. Their communal character is shown by the phagocytosis of the red blood-cells in the clots and by that of spermatozoa in the semen particularly; that is they show the same tendency in the semen to feed on substances contained in it as they do on the substances in the intestinal contents.

M. M. BANOWITCH.



NUSSHAUM, R.: **The Diagnosis of Cancer of the Lung** (*Zur Diagnostik des Lungenkrebses*). *Munchener Medizinische Wochenschrift*, April 7, 1922, lxi, No. 14, p. 507.

Carcinoma of the lung in its initial stages is usually latent. The tumor often gives no characteristic finding on percussion and auscultation. The most certain findings are those in the sputum if the tumor connects with a bronchus. The x-ray is not characteristic. Paralysis of a vocal cord, Virchow's gland and cells in the sputum containing glycogen are suggestive of carcinoma. Hemoptysis with improvement of the dyspnea is suggestive of a neoplasm. Pulmonary tuberculosis is difficult to differentiate both clinically and radioscopically.

H. JOACHIM.

GRAY, H.: **Divided Meals for Severe Diabetics.** *Boston Medical and Surgical Journal*, June 8, 1922, lxxxviii, No. 23, p. 763.

The idea presented itself that a diabetic patient's ability to metabolize food might be stimulated by small meals frequently given, in much the same way that immunity is produced. The theory of divided meals appears to be activation of the liver or pancreas by a small preliminary meal of carbohydrate, given one or two hours before each main meal,—the organism then being in action at the time of that regular meal responds to the food load more vigorously than with the every day three meal schedule. The results indicate that the method does help to lower blood sugar and it is therefore advocated as having practical value.

M. M. BANOWITCH.

LEVIN, S.: **Pyelitis of Pregnancy.** *Journal Michigan State Medical Society*, 1922, xxi, p. 128.

*Etiology and Pathologic Anatomy.*—In the enlargement of the uterus, the lower portions of the ureters are drawn out of position, somewhat kinked, and pressed against the brim of the pelvis. This often causes irritations of the trigone, and frequent urination. Infective organisms enter in four ways: (1) Through the blood from some infected local area; (2) through lymph spaces from local in-

fectured area; (3) ascending lymph spaces in the ureteral wall; and (4) ascending from bladder through the ureter.

*Predisposing Causes.*—(1) Pressure and distortion of the ureter; (2) venous congestion of pregnancy; (3) chronic partial obstruction from old cicatrix or recent inflammatory obstructions of the ureter, bladder, or urethra; and (4) exposure to cold.

*Microorganisms.*—Colon bacilli occur in from 30 to 70 per cent; and arise from stasis of intestinal contents, or infection from intestinal wall in colitis, appendicitis, etc. Streptococcus and staphylococcus are next in order; rarely gonococcus.

*Site Affected.*—Usually the right side alone, but may have unilateral left-sided infection, or a bilateral infection.

*Symptoms.*—Acute form, develops with sudden pain in lumbar region, temperature  $99^{\circ}$  to  $104^{\circ}$  F. with history of some frequency of urination for hours or days before; nausea and vomiting are rather common. Pains may simulate labor pains, appendicitis, or there may be tenderness. Early in the disease on pressure in the kidney region and along the ureter. In chronic or latent cases, may be no symptoms except pus in the urine.

*Diagnosis and Differential Diagnosis.*—These depend almost entirely upon the urinary cystoscopic findings, are the greatest importance, if a putrid odor to the urine and colon bacillus is present. Microscopic findings show varying amounts of pus with cells of the upper urinary canal; red blood-cells in small numbers. Exact etiology determined by bacteriological findings. Differentially, acute pyelitis is distinguished from beginning pneumonia by the history and examination of chest, sputum and abdomen, as well as examination of the urine. This applies also to acute pleurisy. Right-sided pyelitis is distinguished from appendicitis by the location of the pains, which is costo-vertebral and typical pyelitis. Keep in mind pyelitis may accompany acute appendicitis, and make careful analysis of history, physical, and other signs. Pelvic infection, Meckel's diverticulitis, twisted pedunculated tumors, gall bladder disease, and pancreatitis are differentiated with the help of the microscope and cystoscope x-ray should not be employed as causes considerable danger. Leukocytosis has no diagnostic nor prognostic value.

*Prognosis.*—Large proportion of cases recover with drainage and diuretics, although this depends upon various conditions, whether drainage can be established; whether kidney is too severely involv-



ed; upon the primary cause; or whether labor will have to be terminated; or whether the case tends to chronicity.

*Treatment.*—This is based upon the following: (1) Rest in bed; (2) diet of non-irritating and non-stimulating foods; plenty of milk and water; (3) urotropin used properly in an acid urine, with an altered position alone cures mild cases. Salol is used by foreign authors; (4) and most important, if case does not respond promptly to above measures, the cystoscope should be used for examination, and the pelvis of the kidney or kidneys treated directly with 0.5 per cent silver nitrate or 0.2 per cent of argyrol, carefully injected. This usually results in immediate relief and improvement, when drainage was established through the ureteral catheter. If ureter was totally obstructed, so that ureteral catheter could not be passed, the kidney pelvis should be drained through a lumbar incision. Further, if ureteral drainage does not relieve the patient, or faulty drainage recurs with severe infection, it may be necessary to terminate the pregnancy.

MINOT, G. R.: **Megacaryocytes in the Peripheral Circulation.** *The Journal of Experimental Medicine*, July, 1922, xxxvi, No. 1, p. 1.

Inasmuch as immature forms of red cells and white cells which originate in the bone marrow are commonly observed in the peripheral blood in many pathological conditions, especially in myelogenous leukemia, it might be expected that the immature forms from which the blood platelets are derived would also be present. The megacaryocyte (megalocaryocyte), the giant cell of the bone marrow, has been conclusively shown by Wright to be a parent cell of the platelets. The appearance of these forms in the peripheral blood has not previously been noted in the English literature. Foreign authors have reported their presence in cases of myelogenous leukemia, polycythemia vera, and rarely with simple leukocytosis.

Minot has frequently found these cells in the blood of patients with myelogenous leukemia, occasionally in large numbers. He has observed them also in 2 cases of polycythemia vera, one of pneumonia, one of Hodgkin's disease, and one of sepsis. Owing to the large size of the megacaryocytes, many of them are unable to pass through the finer capillaries of the lungs. At autopsy of 3 cases of myelogenous leukemia there were demonstrated in the lungs many

much larger megacaryocytes than were found in the peripheral blood during the last days of life. The lungs of these individuals presented a remarkable appearance. The alveolar walls were thickened and many of the capillaries were plugged with enormous numbers of megacaryocytes.

During a continued study of 45 cases of splenomyelogenous leukemia Minot observed at one time or another megacaryocytes in 35 cases. In 6 cases the megacaryocytes occurred in relatively large numbers. The presence of megacaryocytes and of fragments of these cells in the peripheral blood is usually accompanied by a considerable increase of platelets. Their appearance is to be regarded as indicative of a bone marrow under intense strain.

H. M. FEINBLATT.

FRICKER, E.: **Tests of Functional Capacity of Stomach** (Kritische Bemerkungen zur Frage der Funktionsprüfung des Magens). *Schweizerische Medizinische Wochenschrift*, January, 1922, lii, p. 38.

Lanz (*Arch. f. Verdauungskr.*, vol. 27, No. 4-5) recommends a new acidometer, but also the Ehrmann alcohol test meal. He uses it not only for testing chemically, but also for the motor function. The aim is to eliminate albumen as much as possible, in order to diminish the so-called non-liberated hydrochloric acid. The author criticizes Lanz' acidometer. He says it is not at all simplified as Lanz would lead you to believe. Instead of using one indicator, he uses six.

The author mentions a number of acid-value arrived at in individuals with a healthy stomach. There is little difference between normal individuals in regard to gastric contents. He uses the Ewald-Doas test-meal. The advocates of the more solid test-meal recommend it on account of the food being mixed better with the saliva of the mouth. There is the distinct diminution of gastric secretion when the saliva is absent. According to Bickel, the percentage of the gastric juice constituents remains constant. The increase or decrease of secretion is parallel to the increase or decrease of acidity. This may be demonstrated by the butyrometric method. It is quite evident that the alcohol test-meal which retains the ingested matter, only very shortly, will not tend to excite the gastric secretion. It is, there-



fore, no demonstration for the gastric function. The motility cannot be studied effectively because the passing of the fluid test-meal may mask an existing stenosis. The argument that the x-ray will give a clue to the motor function is not always correct. Not every physician has an x-ray apparatus, and the author has seen delay of emptying by use of the bismuth test-meal.

The author is of the opinion that the invention of many new pathological and clinical conditions are detrimental. The anatomical condition is neglected in favor of the functional, and the result is that symptoms only are treated. Hyperacidity has not always proven to be of any disagreeable effect to the patient. The hyperacidity in the diagnosis of cancer has not proven reliable. In most cases, hyperacidity is an indication for gastric ulcer, or duodenal ulcer, in some of gastritis acida and rarer cases of a purely functional secretory abnormality. The fact remains that the gastric contents must be examined in spite of all other methods.

**EBERT, M. H.: The Prevention of Acidosis in the Treatment of Diabetes.** *Lancet*, 1922, xlii, 33.

It is of tremendous importance to keep the alkali reserve of the blood at the proper height. Acidosis refers to an interference of the normal alkali reserve. When there is but a portion of this reserve gone it is at first compensated for by hyperpnea. Clinically, acidosis is marked, (1) by appearance of acetone bodies in the urine; (2) by increased  $\text{NH}_4$  output in the urine; (3) by decreased  $\text{CO}_2$  tension in the alveolar air; (4) by increasing depletion of alkali reserve of the blood, measured by Marriott's method; and (5) when reserve is exhausted with blood acid, there is onset of coma.

Joslin stated that the specter of impending coma haunts the physician who treats a new case of diabetes. This is especially true in cases of long duration, in the obese, in children, and in cases with heart and kidney complications. It happens in this way—your patient has been eating a great deal of carbohydrates; if these are stopped, and he lives on proteins and fats this causes immediately a condition of acidosis, with incomplete oxidation of acid bodies.

Laboratory examinations are not sufficient. It requires careful watching to note the beginning symptoms, which are slight dulling of mentality, slight puffiness about the eyelids, slight edema, and

dimness of eyesight, with a characteristic odor of the breath and urine. Other symptoms are suspicious as anorexia, nausea, vomiting, restlessness, vertigo, great fatigue, drowsiness and deep breathing. When these or any of these symptoms are noted coma can be prevented by immediate treatment. The patient is put into the hospital on a fat free diet, with a moderate amount of protein and plenty of carbohydrate. If case is mild, this will be sufficient. If severe, after three days protein intake is rapidly cut down. Then on a carbohydrate diet only. These carbohydrates are halved each day until patient is acid-free for several days, then begin starvation. When patient is sugar-free, carbohydrate is added first, in form of 5 per cent vegetables, 5 or 10 grams the first day and 5 to 10 grams a day, up to tolerance. Then on third day add protein, 15 grams a day until 1 gram per kilogram of body weight is reached. On sixth or seventh day, if case is progressing, start with 5 grams of fat, increase gradually 5 to 10 grams a day. Watch for acidosis.

Woodyat and Sansum showed that brandy and alcohol are dangerous during starvation, since they stimulate production of acid bodies.

*Treatment of Coma, Present or Impending.*—Put patient to bed with 1,000 c. c. of warm liquid every six hours. Give either by mouth or bowel, or subcutaneously, or intravenously. Bowels should be kept open by enemas. Glucose by mouth or intravenously and a 5 per cent solution of normal saline may be the form used intravenously. Alkalies do not prevent death from coma, and in fact seem to hasten this so this treatment has been abandoned.

GREER, A. E.: **Treatment of Cardiac Decompensation.** *Texas State Journal of Medicine*, 1922, xvii, p. 479.

Compensation is not a fixed state, but constantly fluctuates. It is the effort of the circulatory system maintained in normal equilibrium. Accommodation of the heart muscle with an hypertrophy in the wall of the heart chamber, is one of the results. The problems of the treatment of severe type of cardiac decompensation, include attention to the marked alteration from normal as found in pulmonary, hepatic and renal congestion, and localized or generalized edemas.

*Diagnosis.*—This must be made from a study of possible disease of the valves, of the blood-vessels, of the muscles of the heart, of renal disease, arterio-sclerosis, obesity, senility, the toxins of acute infec-



tious disease or goiter. However, the main fact for us to keep in mind is the consideration of the reserved power of the heart's muscle.

*Treatment.*—In severe cases, especially acute, as in the flitterings of senile heart, absolute rest in bed, is the greatest essential to recovery. Many cannot take the prone position; have to be sitting in order to relieve their dyspnea, with head leaning back on the back of the chair or on a table. This should be permitted, making the patient comfortable with pillows; as relief is obtained, less pillows may be used, until the horizontal position is reached. Freedom from worry and anxiety is very important; visitors often forbidden. In order to obtain sleep, it may be necessary to give one-sixth of a grain of morphin hypodermically, at bed time; sodium bromid grains 10, with chloral hydrate grains 5 to 10, may be used. Veronal, sulphonal, trional, luminal and luminal-sodium are of lesser value. If heart is irritable, with paroxysmal tachycardia, bromide in full dosage, is urgently indicated. This rest should be maintained until the heart is efficiently controlling the circulation of the blood.

*Diet.*—This should be light, meals frequently five times a day in small quantities. Proper proportions of fat, carbohydrates and protein, with highly nutritious foods without excess of fluids; but 1500 c. c. of fluid should be given during the first 24 hours; gradually increased as compensation is obtained and edema has disappeared. Salt should be rigidly kept out of the diet. In severe cases of edema, the Karell diet of 800 c. c. of milk should be used during 24 hours; improves diuresis and rapidly lessens edema. Tea, coffee and alcohol are absolutely forbidden.

*Medicines.*—At the beginning of the treatment a mild mercurial purge of calomel or blue mass, followed by saline; daily free evacuations are of benefit, but too free purgation may produce exhaustion. A moderate dose of magnesium sulphate, alternating with compound jalap powder every morning, gives best results. Digitalis, an active tincture, fulfills all requirements, although many prefer infusions. This is given in proper dosage every 6 hours during 24 hours (20 to 50 minims of the tincture), then four times a day until digitalization appears, when it is at once stopped, to be resumed in smaller doses two weeks later. Digitalization may not appear for 4 or 5 days, even longer. Nausea is usually the first symptom, and should be watched for. Sinus arrhythmia, partial or complete heart block, premature contraction, or coupled rhythm may appear. The best effects of digi-

talis are found in auricular fibrillation, and in mitral disease without myocardial pathology. Heart failure with anasarca and those cases of hypodynamic heart are both slowed by digitalis. Yet digitalis may be quite effective in restoring failing heart, without greatly slowing it. It is useful in senile heart, as is also strophanthus. This drug does not constrict the peripheral vessels, nor does it stimulate the vagus, but does stimulate the heart muscle. It is given intravenously, or intramuscularly, in the form of solution of a morphus strophanthus or crystalline strophanthus, where rapidity of action is urgently needed. However it must not be given where digitalization is present; given only in those cases in which digitalis has not been given, and it should not be repeated oftener than two or three times in 24 hours. Caffein, in the form of caffein-sodium benzoate, or adrenalin, pituitrin, camphor, and ether, may be used before digitalization begins. Alcohol or ammonia is of little value.

In venous engorgement, with right heart greatly dilated, and edema of the lungs, venesection by removing 8 to 16 ounces of blood, from the vein at the bend of the elbow, may be a life-saving measure. However, relatively few permanent effects have been noted, and this is not a routine measure.

Edema, as a rule, disappears, under the above mentioned regime; although it may be necessary to tap the pleura, pericardium, or peritoneum for ascitic accumulation. Persistent distressing dropsy of the legs may require incision or use of Southey's tubes.

After decompensation has been dissipated the reserve power of the heart should be carefully built up, but he must be safe-guarded against indiscretions.

LEVY, C. S.: *Essential Hæmaturia. A Clinical Study. Surgery, Gynecology and Obstetrics*, 1922, xxxiv, p. 22.

This is a condition of renal bleeding, whose cause cannot be determined, but the diagnosis was not made until all present known urological methods have given negative results. Studies of kidneys removed, have not given constant findings; many have been reported normal; others show small areas of isolated chronic interstitial and glomerular nephritis; still others show nothing but chronic passive congestion, or congestion secondary to cardiac lesions. Theories of



hemaphilia and angioneurosis have been offered in explanation, and one author believes that this condition is a pre-nephritic symptom.

*Age and Sex.*—Chiefly found in males; in the series there were 24 males and 6 females, although this series is almost too small to be significant. The ages of the patient show the greatest number is between 40 and 70; and 2 were over 70. However, there are several cases found below that period. The blood appeared in the urine for the first time between 50 and 70 in 8 cases.

*Symptoms.*—Usually symptomless; thirteen had symptoms varying from slight pain in the back to typical renal colic attack. Those simulating colic were probably due to passage of clots through the ureter.

*Etiology.*—Exertions and injuries were mentioned in three cases, but in the majority of cases it was spontaneous.

*Kidney Involved.*—Right kidney in 17 cases; left kidney in 13. Both kidneys were not involved. This agrees with most observers that essential hematuria is a unilateral affection of the kidney.

*Treatment.*—Procedures are operative and non-operative. Operative include decapsulation, nephrotomy and nephrectomy. Since ureteral catheterization, became perfected, this has been the form of treatment generally employed; using injections of adrenalin; silver nitrate solutions by some; serum by others, into the renal pelvis. Oral administration of calcium lactate; subcutaneous or intramuscular injections of horse serum or the employment of transfusion has helped in some cases. Focal infection has been sought for, and when removed, has often caused a disappearance of the hematuria.

*Operative.*—In the author's series, there were 5 operative cases; nephrotomy 3, decapsulation 1, and nephrectomy 1. This last was done to save the patient's life because the loss of blood was excessive. An apparently normal-sized kidney was found; pelvis was filled with blood clots, kidney vessels intensely engorged, but no gross lesion to account for the bleeding, and nothing remarkable microscopically. The decapsulation brought apparent relief for five years, but since then there has been three recurrences. The nephrotomies show one case with no return in 8 years; the other two showed recurrences, 2½ and 5 years after operation.

*Non-Operative.*—Usually intra-pelvic injections through ureteral catheter, using adrenalin or silver nitrate solution into the renal pelvis. Silver nitrate, 5 per cent in 5 cubic centimeters amount was

injected daily into the pelvis of the kidney, with no improvement. Then 10 cubic centimeters of horse serum were injected subcutaneously, with no effect. Later the pelvis of the kidney was completely distended, with 11 cubic centimeters of silver nitrate solution. This caused, at first, profuse bleeding with large clots and considerable pain. Twelve days after last treatment, urine was clear; no recurrence for four months. This over-distension of the pelvis, in this condition, was used first by Braäsch (1913). This distension must be more than momentary, kept up for a few minutes by plugging the distal end of the ureteral catheter.

Of the 12 cases with no recurrences, the following treatments were employed: Pelvis distension or pyelogram, 7 cases; spontaneous cessation, 1; nephrectomy, 1; nephrotomy, 1; calcium lactate, orally, 1; and mixed treatment, 1. Where pelvic distension was used, 65 per cent of the cases had no recurrences.

Eighteen cases are grouped as recurrences; in 15 of these, there was cessation for a short period; in 14, intra-pelvic therapy was used, 8 with no distension, 6 with distension. In one case in which the hematuria had been continuous for six months, the extraction of two teeth with abscess roots was followed by clear urine in 5 days. There had been no recurrence for fourteen months. In one case, a patient who had been free from bleeding for 12½ years, found that it returned on exertion on a farm. In one case a typical neurasthenic reported recently, that his health was bad; of the remaining 20 who were alive, the health was described as good or excellent in 25, and fair in 2.

*Prognosis.*—Essential hematuria does not influence general health of patient, nor lead to disturbances of urinary tract later on. Therefore a favorable prognosis is given. Only 2 deaths occurred, neither has the cause been related to hematuria. When life is threatened or severe anemia exists, nephrectomy should be employed. Nephrotomy is condemned on general principles, and results were not striking. Decapsulation was not a complete success. The best method of treatment was intra-pelvic therapy, with pelvic distension.

WILLIS, P. W.: **Some Preventable Causes of Adhesions.** *Northwest Medicine*, 1922, xxi, 81.

The author does not take up all the causes of adhesions, but brings up three cases showing some very simple preventable causes.



The first case was that in which a portion of the small intestines had been caught and fastened to the wound with sutures. This had caused a more or less general peritonitis, with the patient in a very serious condition, since there was a discharge from the wound which evidently came from the small bowel. This had occurred since the operator was in too great a haste in closing the wound, because of the condition of the patient. While one should not loiter during a surgical operation, the surgeon should always take sufficient time to make a careful closure.

The second case was similar to the first except that it was not quite so serious. A secondary operation showed that an operator had allowed the edges of the peritoneum to be retracted for some distance on either side of the wound, when closing the abdominal wound.

The third case was that of acute obstruction occurring 12 days after an operation for ovarian cyst and appendix. The abdomen was badly distended, and stomach washing had a fecal odor. X-ray showed obstruction of the small intestine 6 inches from pylorus. A secondary operation disclosed a hematoma in the abdominal wall; about three-fourths of the small intestine was greatly distended in its upper portion, with the lumen almost completely shut off from adhesions. There had been no antiseptic solution in the abdominal cavity, and it was difficult at first to decide just what caused the adhesions, until finally it was learned that no thermometers were used in determining the heat of the water; most surgeons operating, insist upon its being very hot, and this "the worst mass of adhesions of small intestines that I have seen with the exception of cases of tuberculosis or malignancy was probably due to a large hot, wet-pack, used to keep the intestines out of the way. This brought about the uniform system for the use of thermometers; the water being cold, warm, or hot—the hot water limited to the degree which can be borne by the patient. The literature states that water as hot as 135° to 140° F. (57.2° to 60° C.) can be borne by the tissues, but it is best to allow a very large margin of safety.

SILVERMAN, D. N.: **A Clinical Study of the Colorimetric Method for Determining Gastric Acidity.** *New Orleans Medical and Surgical Journal*, 1922, lxxiv, p. 627.

The apparatus of Shohl and King was made available for practical use for the first time, and the author was the first to receive this out-

fit for trial outside of their own laboratories. The method has as a basis, the determination of the real or physiologic amount of hydrochlorid acid in the gastric contents by the colorimetric method of measuring H-ion concentration. Osborne (*Med. Jour. of Aus.*, November 3, 1917), of Australia, foresaw a more extended use for the indicator ladder. Shohl, at Johns Hopkins, worked out a simplified technic. Shohl and King are using a range of standard acid mixtures of known amounts with the indicator thymolsulphonephthalein. This variety of colors corresponds to certain acid values expressed in terms of H-ion concentration from 1.4 (hyperacidity) to 3 (anacidity), or at the same time in terms of the number of cubic centimeters of tenth-normal hydrochloric acid in every one-hundredth cubic centimeters of gastric contents. The filtered sample of gastric contents is taken in the amount of 2 c. c. and two drops of the indicator solution, one per cent thymo-blue, are added from the pipette. The resulting reaction is compared with the standards. A comparison has been made with the results obtained by using the new colorimeter with the results of titration with N/10 sodium hydroxid after adding dimethylamidoazobenzol (Toepfer's reagent). The cases in this series represent various types of gastro-intestinal disturbances. Of some fifty samples of gastric contents, the author found that H-ion concentration gave practically the same results as the readings by a titration in normal and hyperacid cases. In some cases of low acidity, on the other hand, colorimetric readings varied a great deal with Toepfer's method.

Aaron emphasizes the importance of the absence of hydrochlorid acid from a clinical standpoint, and states that when hydrochloric acid is found to be present it is unnecessary to test for pepsin, or pepsinogen, since the ferment is always present when free hydrochloric acid can be demonstrated. Whenever there was shown to be an achylia, with Toepfer's reagent, the colorimetric reading was 3.0. Just as the colorimeter is applicable to the one-hour extraction of a test-meal it may be used for the interval or fractional specimens. The simple one-hour digestion as determined by the analysis of contents taken at that period, is more accurate than tests made every 15 or 20 minutes until the stomach is empty. Sometimes the specimens have to be filtered and reexamined, as they are occasionally altered by the presence of foreign coloring matter, such as bile or blood.



WILLIAMS, J. W.: Spontaneous Labor Occurring through an Obliquely Contracted, Kyphotic, Funnel Pelvis. *Bulletin Johns Hopkins Hospital*, 1922, xxxiii, 190.

Patient, colored girl, 21 years old, deformed by kyphotic changes in vertebral column and ankylosis of left hip and knee. Two previous pregnancies ended in Caesarean section, and two years previously.

Patient was in labor 3 hours and 20 minutes when vaginal examination showed cervix fully dilated and head on pelvic floor in R. O. A. Membranes ruptured spontaneously, and low forceps were applied, and a male child weighing 2420 grams (5.36 lbs.) and measuring 46 cm. (18.11 in.) was easily delivered without injury to perineum.

The labor was interesting from 2 points of view: (1) That the child passed through the abnormal pelvis without difficulty; and (2) that neither the distention of uterus incident to pregnancy nor strain of second stage of labor had any untoward effect upon the scars of previous section.

## SECTION ON LABORATORY AND RESEARCH

FLEXNER, S.: **Experimental Epidemiology. Introductory.** *The Journal of Experimental Medicine*, July, 1922, xxxvi, No. 1, p. 9.

During the past twenty years the impressive epidemics of the western world have been meningitis, poliomyelitis, influenza, and latterly epidemic encephalitis. All these epidemics are indeed old-world diseases, and, excepting lethargic encephalitis, they can be traced far back in recorded human history.

Ever since Hippocrates and especially since Sydenham, the study of epidemics of disease with a view to penetrating their hidden meaning has engaged the attention of occasional men. The degree of interest in what may be called the nature of epidemics has, however, fluctuated greatly and considerable periods have elapsed in which the subject has been given only superficial thought. Then circumstances have arisen through which both the professional and the public mind has become so engrossed with it that new efforts come to be put forth in order to grasp its significance. We are moving now in such a period of revived interest. The rise of modern bacteriology, the knowledge of the action of certain disease-producing microörgansms taken directly into the alimentary tract, and the discovery of the part played by certain insect vectors, have led to practical achievements of great magnitude in the domain of hygiene.

While modern bacteriology advances the belief in a specific etiology, in which a particular microörganism is sought as the incitant of the infectious disease under study, it is obvious that this knowledge is not sufficient to account for all the phenomena of epidemics. That the mere occurrence of potent microörganisms does not suffice to produce an outbreak of epidemic disease is a commonplace of bacter-



iological knowledge. The conditions are not so simple as that, and in their greater complexity they include not only the various qualities of the microbe but also of the host and, as well, their many reactions, one upon the other.

Epidemic outbursts of disease occur among animals and pursue a course similar to that which has been observed to occur in man. The direct study of epidemics in animals under conditions of control not attainable in man should therefore commend itself to the epidemiologist. By this means it may be possible to secure those precise data of both microorganism and host on which eventually a real science of epidemiology may be built.

An investigation was undertaken several years ago relating to epidemics in mice of gastro-intestinal origin, to which the term of mouse typhoid is applied. While mouse typhoid presents clinical and pathological characteristics of a single disease-complex, its microbe incitant is not a consistent species. Indeed, just as there are distinct but related bacilli inducing dysentery in man, there are distinct but related bacilli capable of provoking "typhoid" in mice. Not only do specific differences exist among so-called mice typhoid bacilli, but all the pathogenic varieties appear extremely labile. Strains of the bacilli artificially enhanced as they pass from mice to mice quickly fall to an average of infectivity and are, as it seems, at low pathogenic ebb at the time of the death of the infected animals. But this lability of the bacilli is determined in part by the hosts. In this respect mice may be viewed as consisting of different biological classes according as they respond to the ingestion of the bacilli with infection and death, with mere carriage of the bacilli, or with non-reactibility. The distinctions of classes are not, however, absolute, but are determined, partly at least, by the quantity or dosage of the bacilli. It is this latter factor which plays so conspicuous a rôle in the phenomenon of recurrent epidemic waves superinduced by the introduction of new mice in the replacement experiments described. While it is the "carrier" among the old mice which provides the "seed" for the next following epidemic outbursts, it is the highly susceptible individuals among the new which furnish the living "culture" medium enabling rapid increase and wide dissemination of the bacilli to be effected, just as it is the succumbing and non-reactible mice which check the growth and multiplication that tend to arrest the epidemic spread.

H. M. FELSBLATT.

LYNCH, C. J.: **An Outbreak of Mouse Typhoid and its Attempted Control by Vaccination.** *The Journal of Experimental Medicine*, xxxvi, No. 1, p. 15.

Lynch describes an epidemic of so-called mouse typhoid which prevailed with fluctuations for approximately  $2\frac{1}{2}$  years in a mouse breeding station maintained at The Rockefeller Institute. The original stock of 3000 mice was transported *en masse* to the Institute. The epidemic occurred in two waves. During a quiescent period at the close of the first epidemic half of the mice were vaccinated with a single injection of 600,000 of killed bacilli of the strain of mouse typhoid isolated during the epidemic. The vaccination produced no immediate effect upon the death rate, although it is noteworthy that during a four weeks period only two of the vaccinated mice died and in only one was the mouse typhoid bacillus found.

A second major outbreak of mouse typhoid arose. All of the dead mice were examined post-mortem and the bacilli obtained were subjected to immunological studies. The cultures showed that these bacilli differed from those obtained during the first wave.

The fact that the two strains of the typhoid-enteritidis group, differing immunologically from each other and both potentially capable of setting up severe epidemics among mice, were responsible for the epidemics separated from each other by two years, comes to have a special interest and may possess a particular significance in view of the vaccinations carried out in the period between the two epidemics. For superficially, at least, it appears that the inoculation of the killed cultures of the first bacillus shunted, as it were, that particular organism out of action while leaving the recruited population, both old and new, and the old even more than the new, subject to a second variety of the mouse typhoid bacillus. It appears that the vaccination of part of the surviving population at the end of the first epidemic was sufficient to protect the entire population from infection with the first variety of the mouse typhoid bacillus.

H. M. FEINBLATT.

WRIGHT, J. H., AND CRAIGHEAD, E. M.: **Infectious Motor Paralysis in Young Rabbits.** *The Journal of Experimental Medicine*, July, 1922, xxxvi, No. 1, p. 135.

During experiments planned to confirm, if possible, the rat and flea transmission theory of infantile paralysis as outlined by Richard-



son, a spontaneous motor paralysis was observed in young rabbits. The attempt to infect young rabbits and guinea pigs with material containing in all probability the virus of infantile paralysis failed.

Eleven rabbits which had been exposed to fleas which had previously bitten rabbits inoculated with human poliomyelitic virus became paralytic and died, the intervals between the first flea bites and death ranging from 9 to 40 days. It seemed, therefore, highly probable that a paralytic disease having its origin in human infantile paralysis had been induced in young rabbits and transferred from animal to animal by the bites of fleas. The fallacy of this conclusion was quickly demonstrated, however, by the proper control experiment, in which three normal animals were simply placed in the cages with the sick rabbits, the intermediate biting of the fleas being omitted. Two of these control rabbits developed paralysis and one of them died. Thus we had to do, presumably, with a paralytic disease in young rabbits spread by simple contact. Further investigation showed, moreover, that it was associated with a large organism which could not possibly have anything to do with human infantile paralysis.

Clinically this rabbit disease is characterized by a persistent drowsiness, followed in most cases by a tremor shortly before the development of paralysis. The paralysis may be slight or marked, general or localized, and the mortality is high.

The organism is found widely distributed in the organs of the affected animals and can be demonstrated in the urine. The active destruction by the organism of the nerve cells of the spinal cord is particularly striking, and gives complete explanation for the paralysis observed clinically.

The organisms may measure 4 microns in length and 1.5 microns in width. They stain by Gram's method and with methylene blue. They are acid-fast to a certain extent.

H. M. FEINBLATT.

AMOSS, H. L.: **Experimental Epidemiology. I. An Artificially Induced Epidemic of Mouse Typhoid.** *The Journal of Experimental Medicine*, July, 1922, xxxvi, No. 1, p. 25.

Mouse typhoid constitutes a common sporadic and fatal epidemic affection among mice and from time to time sweeps through mice

colonies in highly destructive waves. Under strictly experimental conditions Amoss induced such an epidemic in what may be termed a mouse village. The mouse village was set up by placing in rows on metal shelves cages with wire mesh tops. Five mice were placed in each cage without communication between the cages, so that infection could be transferred only by the hands and implements of the person cleaning the cages and feeding the mice. A small number of mice were fed on a culture of so-called mouse typhoid bacillus. The spread of the infection so induced to the cages, or "homes", of the other mice was left to accident through the attendant who fed the animals and cleaned the cages. The first effect of the exposure of normal mice to a much smaller number of mice fed on the culture is to set up a *sporadic*, not an *epidemic* outbreak of mouse typhoid. This is the regularly recurring incident of the experiment as shown by low mortality and low cage attack rate. Such a sporadic prevalence is self-limited in time.

The analysis of the strains by selecting single cells and thus establishing substrains yielded results which eventually may have value in explaining fluctuations in virulence. Among the positive data arising from the experiments with such cultures are: (1) That there have been obtained by mechanical means from the ordinary bacteriologically pure culture, single cell strains exhibiting slightly different pathogenic activity, whether administered by mouth or parenterally; and (2) that more regular results are obtained with intraperitoneal injections of these strains than with the parent strain.

Among the negative results to be recorded are the failures of two single cell strains to incite an epidemic among mice under conditions known to be suitable when the parent strain is used.

H. M. FEINBLATT.

AMOSS, H. L.: Experimental Epidemiology. II. Effect of the Addition of Healthy Mice to a Population Suffering From Mouse Typhoid. *The Journal of Experimental Medicine*, July, 1922, xxxvi, No. 1, p. 45.

A spontaneous epidemic of mouse typhoid and an artificially induced outbreak of the same disease having already been described, Amoss instituted a minute study of the effect of bringing a healthy stock of mice into a community in which mouse typhoid was prevail-



ing. It was found that the introduction of fresh, normal mice into a community in which sporadic deaths are occurring leads regularly, not to the further extension of the sporadic deaths, but to an epidemic spread, as shown by high mortality and high cage attack rate. The epidemic begins with deaths among the new mice, but extends to the old mice, which succumb later. The spread ceases and the wave subsides before all the mice have succumbed. A state of equilibrium between the infecting bacillus and the surviving mice is reached; no more deaths occur. The epidemic outbreak, therefore, is self-limited in time.

If, now, another addition of normal mice is brought into the potentially infected community, the events are reenacted; deaths occur among the new, another epidemic wave sweeps through the population, again claiming victims among the previous survivors. Through the replacement of the destroyed mice with fresh, normal mice, epidemic wave after wave is produced, until certain groups of old survivors are entirely wiped out. There seems to be no limit to this process, as there will always be survivors at least of the later groups added. The dying down of the epidemics and the attaining of the equilibrium do not mean the elimination of all of the bacilli. Potential infection still lurks in mouse "carriers" and on the hands of the attendant. The maintaining of the epidemic waves is dependent on the presence of new lots of mice, whether supplied from without or produced from within through new births.

The evidence at hand is to the effect that the degree of infectivity of "mouse typhoid" bacilli is highly fluctuating, and it appears that all the bacilli which are included under that name, classed variously as *Bacillus enteritidis*, Gärtner's bacillus, *Bacillus paratyphosus*, *Bacillus supeptifer*, and *Bacillus pestis caviar*, infect mice in a similar, possibly indistinguishable manner, inducing self-limited outbreaks of disease reaching at times epidemic proportions. This quality of infectivity, or virulence, is one factor in the process, but alone does not suffice to account for the observed facts. A second influence is not an improbably quantity, or dosage, of the inciting micro-organism. The supposition is, therefore, that among the new mice are certain individuals so highly susceptible as to react to small numbers of bacilli of average infectivity. Within these animals the multiplication is rapid, so that a wider spread of much larger amounts of these average, or even temporarily enhanced bacilli takes place with

the inevitable effect of communicating, through greater dosage, the infection to other and less susceptible individuals among the new and also the older lots.

H. M. FEINBLATT.

MAURER, S., AND LEWIS, D.: **The Structure and Differentiation of the Specific Cellular Elements of the Pars Intermedia of the Hypophysis of the Domestic Pig.** *The Journal of Experimental Medicine*, July, 1922, xxxvi, No. 1, p. 141.

On the basis of known facts it is safe to consider that the presence of the pressor substance in the pars intermedia has been established, but its relation to the colloid material of the pars intermedia or to the hyalin and granular masses of the pars nervosa remains a subject for further investigation.

In order to establish the fact that the pars intermedia is a functional unit in the hypophysis, it is necessary for comparison to describe and illustrate the cells of the anterior lobe. Five different types of cells are readily distinguished. Three of these are chromophile types and two chromophobe.

The cells of the pars intermedia are of two sorts, one of which, the secretory cell of the pars intermedia in the strict sense is different from every other cellular element in the hypophysis and by its presence serves to delimit the pars intermedia. The other type is the colloid-producing cell which is common to the pars intermedia and that part of the gland surrounding the upper portion of the stalk. The former cells constitute the great bulk of this portion of the gland. The secretion in these cells is a highly labile material which appears in suitably fixed preparations in the form of small granules which are very difficult to stain.

The study of the embryonic hypophysis was undertaken to discover whether there was any relation in time between the appearance of the characteristic pressor effects of the posterior lobe extract and that of the granular secretion antecedents in the cells of the pars intermedia or of hyalin bodies or other structures which have been hypothetically related to the production of the pressor substance. It was found that the pressor substance of the posterior lobe of the hypophysis was coincident in time of appearance with the granules or secretory antecedent of the pars intermedia. The authors believe



that the secretion leaves the gland by the vascular route rather than by way of the interfibrillar spaces of the pars nervosa.

H. M. FEINBLATT.

WEBSTER, L. T.: Experiments on Normal and Immune Mice With a *Bacillus of Mouse Typhoid*. *The Journal of Experimental Medicine*, July, 1922, xxxvi, No. 1, p. 71.

A series of experiments was undertaken to ascertain the varieties and degrees of resistance in normal and immunized mice to mouse typhoid bacilli of the paratyphoid-enteritidis group. The experiments were so designed as to bear directly on such questions as the relation of infectivity on the part of the microorganisms to the portal of entry into the body of the host and also on the influence of a possible local as opposed to a general immune state, the effect of which would be to alter or even to abate the danger of infection by the ordinary route traversed in nature.

It was found that if live cultures of a mouse strain of the *Bacillus pestis caviae* are injected intrapleurally or intraperitoneally into normal mice, there occurs an initial lag in the rate of bacterial multiplication lasting four to six hours, followed by a rapid and continual acceleration of growth until the death of the animal. To this rule there are exceptions in an occasional recovery or an undue prolongation of the survival period. The mice dying acutely exhibit few pathological changes, while those in which the infection pursues a more chronic course show macroscopically thick peritoneal or pleural exudation, and lesions of the lungs, liver, and spleen consisting of hepatization, nodule formation, swelling, etc. The injected bacillus was always recovered from the heart's blood and organs.

If live cultures of this organism are given *per os* to normal mice, there occurs an incubation period of 5 to 6 days, after which the animal usually develops symptoms of the disease and succumbs. A small percentage of mice, however, proves refractory to infection by this route.

If live cultures of this organism are injected intrapleurally or intraperitoneally into mice previously vaccinated intrapleurally or intraperitoneally, they are partially destroyed and held in check by the protective mechanisms of the animal body for 2 or 3 days. Subsequently the rate of bacterial multiplication increases gradually until

the death of the animal. The partial protection conferred by this type of vaccination is entirely of a general nature; no evidence of a local immunity has been obtained.

Mice given one, two, or three subcutaneous doses of "vaccine" show a similar relative increase in resistance to the subsequent intraperitoneal or *per os* injection of live organisms.

Feeding mice live or killed cultures of this organism induces a definite protection against subsequent intrastomachal and intraperitoneal injections of live organisms. The immunity developed in this way is also of a general as opposed to a local nature.

H. M. FEINBLATT.

WARTHIN, A. S.: **The Excretion of *Spirocheta Pallida* through the Kidneys.** *Journal of Infectious Diseases*, June, 1922, xxx, No. 6, p. 569.

Spirocheturia appears to be a striking phenomenon of the entire group of spirochetal infections. The elimination of the spirochetes through the kidneys with the production of associated renal lesions appears to constitute the family characteristic in so far as the known types of the organisms have been studied thoroughly. It is best known in the case of infections jaundice and in this disease is a factor of considerable diagnostic value.

Syphilitic spirocheturia occurs in the stage of septicemic syphilis, in both the congenital and acquired infections. *Spirocheta pallida*, as is *Spirocheta icterohemorrhagica*, may be excreted in enormous numbers through the convoluted tubules. During such excretion through the kidneys, the spirochete of syphilis suffers greater destruction than does the icterogenic parasite, so that fewer spirochetes may reach the urine in syphilis than in infectious jaundice. The demonstration of the occurrence of syphilitic spirocheturia is, therefore, not likely to possess such diagnostic value as that of icterogenic spirocheturia.

It seems probable that spirocheturia is more likely to occur when the spirochetes in the blood stream are exposed to the action of antibodies or spirocheticidal drugs. Further, spirocheturia in any degree, both in the case of syphilis and infectious jaundice, appears to be associated with definite degenerative lesions of the epithelium of



the convoluted tubules. Such lesions may make the tubules more pervious to the passage of the spirochetes.

M. M. BANOWITZ.

BLOOM, W.: **Histamin as an Inflammatory Agent.** *Johns Hopkins Hospital Bulletin*, May, 1922, xxxiii, No. 375, p. 185.

The above experimenter found that histamin exerted no inflammatory or chemotatic properties to the tissues either *in vivo* or *in vitro*. The inflammatory reaction was not any more marked in any case than was the control.

DE F. LAYTON.

MACLEOD, J. J. R.: **Pancreatic Extract and Diabetes.** *The Canadian Medical Association Journal*, June, 1922, No. 6, p. 423.

At intervals since 1887, when Minkowsky discovered that excision of the pancreas in dogs causes diabetes, attempts have been made by numerous investigators to supply the evidence of an internal secretion; some of these attempts have been crowned by a certain amount of success, notably, among recent investigations, those made by Knowlton, Starling, Kleiner, Murlin, Scott and Paulesco; but the results have been considered by the authors themselves to be inconstant and insignificant to justify more intensive research with the object of securing preparations of greater potency, that could be used for the treatment of diabetes in man.

Recently remarkable observations have been made in the physiological and pathochemical laboratories and the Medical Clinic of the University of Toronto by Banting, Best, Collip, Campbell and Fletcher. They have prepared an extract of pancreas capable of removing all the cardinal symptoms of diabetes, both in animal and man. Thus it caused the blood sugar to return to normal, urine sugar to disappear, acetoneuria to vanish and the respiratory quotient to rise to its normal level. Subjectively a feeling of well-being is experienced by the patient. The extract was administered subcutaneously. Banting and Best have also shown that in depancreatized animals, life could be prolonged much longer by daily injections of the extract, than in non-treated animals. The authors promise to publish in the near future a detail method of preparing the extract and its mode of administration.

In collaboration with these observers Hepburn, Latchford, Noble and the writer have shown that subcutaneous injection of the extract into normal rabbits, causes a fall of the blood sugar and when this reaches about 0.045 per cent the animal is seized with convulsions and if left alone passes into coma and finally death ensues. If a solution of sugar be injected subcutaneously into such an animal immediate recovery follows—permanent or temporary, which may again be overcome by further injection of sugar. These symptoms, according to the observers are due to lowering of blood sugar and called by them hypoglycemic convulsions. F. C. Mann produced similar symptoms in dogs by lowering their blood sugar to 0.04 per cent by isolation of the liver from the circulation.

The pancreatic extract has been found efficient also in non-pancreatic diabetic animals in whom the diabetic syndrome has been produced by puncture of the floor of the fourth ventricle, asphyxia, poisoning by illuminating gas, ether or adrenalin. These animals were well fed with carbohydrates and the glycogen contents of the liver determined before experimentation and found normal.

It is of interest to note the change brought about in the distribution of glycogen and fatty acids in the various organs of the body of the diabetic animal under the influence of the extract. Thus, the liver of a pancreatic diabetic dog contains but a very small amount of glycogen, even when the animal has been ingesting large amounts of carbohydrates, and on the other hand this organ is heavily loaded with fat. When extract is given a very large amount of glycogen appears in the liver (about 12 per cent) and the amount of fat declines. The blood of untreated depancreatized animals contains about 2 per cent of fatty acids—a marked lipemia—but falls to 0.5 per cent after the administration of the extract. The heart of such diabetic animals contains the highest percentage of glycogen, but is markedly lowered after treatment with the extract. The R. Q. ratio has been raised from 0.65 to normal (1.0) in these animals by the pancreatic extract.

S. M. CHESS.

KÖPELOFF, N.: **Bacteriologic Studies of Gastric Fractions Obtained by the Rehfuss Method.** *Journal of Infectious Diseases*, June, 1922, xxx, No. 6, p. 613.

The following results were obtained by the Rehfuss fractional method of gastric analysis carried out on normal and psychotic per-



sons. It was found that: The organisms most frequently found in the stomachs of normal and psychotic persons were members of the staphylococcus, streptococcus, lactobacillus, and yeast groups. During an analysis, approximately the same types and numbers of bacteria were found in the stomach irrespective of high or low acidity fluctuations. This indicates that the gastric acidity is not the most important factor limiting the bacterial content of the stomach during a fractional analysis. Streptococci were found associated with high as often as with low gastric acidity; consequently there seems to be no reason to attach undue importance to their presence or therefore to consider the stomach a focus of infection. A method was devised for studying the influence of saliva on the bacterial content of the stomach. A striking reduction in numbers of bacteria occurred when the swallowing of saliva was thus reduced, indicating that saliva was a factor of considerable importance. This was even observed in subjects having a low gastric acidity contrary to expectation, if the stomach was to be considered a focus of infection. The removal of primary foci of infection has not caused any material change in the gastric acidity, types or numbers of bacteria found in the patients examined.

M. M. BANOWITCH.

ROSENTHAL, S. M.: **An Improved Method for Using Phenoltetrachlorphthalein as a Liver Function Test.** *Journal of Pharmacology and Experimental Therapeutics*, June, 1922, xix, No. 5, p. 385.

Phenoltetrachlorphthalein has been injected intravenously and its subsequent concentration in the blood has been studied, colorimetrically. In normal dogs there is an immediate rise to approximately 10 per cent, rapidly falling to only a trace or to complete disappearance within fifteen minutes. When the liver is damaged, experimentally by chloroform anesthesia for one to two hours, which induces a central necrosis, the amount of dye in the blood reaches fifteen to thirty or more per cent, and remains elevated for a prolonged period, 11 per cent having been recovered almost two hours after injection. There is evidence that the curves obtained have paralleled the degree of impairment of liver function, and it is believed that the method can be applied clinically as a quantitative test for liver function.

C. A. SCHMID.

McCOLLUM, E. V., SIMMONDS, N., KINNY, E. M., AND GRIEVES, C. J.:  
**The Relation of Nutrition to Tooth Development and Tooth Preservation.** *Bulletin Johns Hopkins Hospital*, June, 1922, xxxiii, No. 376, p. 202.

The above investigators in experiments on rats found that diets deficient in protein, calcium and fat soluble A, caused the greatest percentage of oral defects. The diets deficient in calcium and high in fat soluble A, with a defective protein content produced 11 per cent of oral defects. The oral tissues were least damaged by diets high in calcium and low in fat soluble A, those high in calcium and cod-liver oil, and those low in calcium and cod-liver oil. No caries-like lesions, pulp exposure or osteodentine, or maxillary defects developed in the control stock rats.

A deficiency in anti-scorbutic substance from the diet of man would no doubt be a factor in the production of oral disease but the rat is able to synthesize this substance. Polyneuritis and scurvy were outspoken expression of marked deficiency.

The authors believe that slight variations in the American diet, which always so dangerously approaches the level of dietary deficiency, might become active at any period of lowered resistance or of physical or nervous stress and cause severe oral disease.

DE F. LAYTON.

SOLLMANN, T.: **Studies of Chronic Intoxications of Albino Rats. VI. Lead Carbonate.** *Journal of Pharmacology and Experimental Therapeutics*, June, 1922, xix, No. 5, p. 375.

Rats to whose food lead carbonate was added in small doses daily showed slight but definite check of growth and appetite. The effect starts within eight weeks, and increases with the duration of the feeding. No other definite symptoms occurred, even when the administration of lead extended over thirty-five weeks. The mortality was rather high, between nine and seventeen weeks, due probably to lowered resistance. Another group of rats grew and ate normally although fed on larger doses of lead .3 to 1.22 mg. per kilogram per day for eight weeks. These animals were younger which may possibly account for their resistance. The daily dosage of lead in clinical human plumbism probably begins with 1/5 to 1/3 grain, 0.2 to 0.3



mg. per kilogram. It is seen that much smaller doses, corresponding to as little as 1/1500 grain per man per day, are not harmless to rats. It is improbable that rats are not much if any more susceptible to lead than is man. It is much more probable that these minute doses would also interfere with the nutrition and resistance of man, although they do not produce the clinical picture of plumbism.

C. A. SCHMID.

SHIPLEY, P. G., AND PARK, E. A.: **Studies on Experimental Rickets. The Effects of Administration on the Histological Structure of the Growing Bones of Strontium and Experimental Rickets.** *Johns Hopkins Hospital Bulletin*, June, 1922, No. 376, p. 216.

When strontium replaces calcium in an otherwise satisfactory diet (2.2 per cent of strontium carbonate) it stimulates growth, and causes the bones to develop the characteristic picture of rickets, strontium rickets. The strontium sclerosis of the marrow cavity described by Lehnerdt was due to a diet very poor in calcium and high in phosphorus and deficient in fat soluble A, or a secondary dietary essential which we have shown to be associated with certain fats, notably cod-liver oil. Cod-liver oil will not enable the animal to compensate for a faulty diet containing strontium.

DE F. LAYTON.

AMOSS, H. L., AND HASELBAUER, P. P.: **Immunological Distinctions of Two Strains of the Mouse Typhoid Group Isolated During Two Spontaneous Outbreaks Among the Same Stock.** *The Journal of Experimental Medicine*, July, 1922, xxxvi, No. 1, p. 107.

In the cancer-breeding station maintained at The Rockefeller Institute there occurred, during two and half years, two separate outbreaks of mouse typhoid among the 2500 to 4000 mice. The first of these appeared in the autumn of 1918 and the second exactly two years later. These two strains of the paratyphoid-enteritidis group causing separate epidemics were found to be antigenically different. Mouse Typhoid I, isolated from the first outbreak, was related to but not identical with two strains of enteritidis, while Mouse Typhoid II, isolated from the second wave, was related to but not identical with the human paratyphoid B. strains.

H. M. FEINBLATT.

WEBSTER, L. T.: **Identification of a Paratyphoid-Enteritidis Strain Associated With Epizootics of Mouse Typhoid.** *The Journal of Experimental Medicine*, July, 1922, xxxvi, No. 1, p. 97.

Webster identified a bacillus of the paratyphoid-enteritidis group associated with epizootics among laboratory mice with the *Bacillus pestis caviæ* Smith, which produces similar affections in guinea pigs and which has been very closely related to the type "mutton" *aertrycke* strain of Schütze. This identification was based upon the cultural reactions of the organism, direct and cross agglutinations, and similar absorptive capacities of the unknown and type strains.

To have closely related this mouse typhoid strain to other paratyphoid types is to emphasize again the ubiquity of the paratyphoid group and the possibility that the various strains found in mice, rats, guinea pigs, sheep, and doubtless in other domestic animals, active, capable of producing epizootics, may likewise be human pathogens with greater or less degrees of virulence. Precise information concerning the underlying principles of mouse typhoid infections and epizootics should, therefore, be of great service in the interpretation of similar phenomena of man.

H. M. FEINBLATT.

HAPP, W. M.: **Occurrence of Anemia in Rats on Deficient Diets.** *Johns Hopkins Hospital Bulletin*, May, 1922, xxxiii, No. 375, p. 163.

The writer finds that well balanced diets, deficient in iron do not produce anemia in the rat in the first generation, nor do diets consisting solely of cows milk or milk and bread. Slight anemia may occur in rats of the second generation on these diets. Diets deficient in fats caused severe nutritional disturbances but did not produce an anemia. Diets low in an organic substance, contained especially in cod-liver oil with a low calcium but high phosphorus content, produced ricket-like changes in the rat and also anemia when the animal was kept on the diet for a long time. The anemia was associated with evidences of increased hematopoietic activity. There was often an enlargement of the spleen. This condition resembles the anemias seen in human rickets. A diet low in the organic substance contained in cod-liver oil and low in phosphorus with a normal calcium content produces severe rickets with uniformity but not anemia.

DE F. LAYTON.



SMITH, M. I.: **Studies on the Chemotherapy of Silver and Arsenic Compounds in Experimental Tuberculosis.** *American Review of Tuberculosis*, May, 1922, vi, No. 3, p. 183.

Neocarphenamin and silver arspenamin have a very slight inhibiting action on the growth of the tubercle bacillus *in vitro*. Colloidal silver oxide has no effect whatever on its growth, while silver methylen blue has a very considerable inhibiting action on its growth. None of these substances has any demonstrable effect on the pathogenicity of the tubercle bacillus when exposed to their action *in vitro* at body temperature for forty-eight hours. None of these substances when administered to experimentally infected guinea pigs has any favorable influence on the course of the disease.

O. A. SCHMID.

GRABFIELD, G. P.: **The Hemolytic Properties of Arspenamin and Fifteen Allied Compounds.** *The Journal of Pharmacology and Experimental Therapeutics*, June, 1922, xix, No. 5, p. 343.

In the article the author describes a method which was used in testing the hemolytic activity of various samples of arspenamin and allied substances using sheep's red corpuscles as a test object. The hemolytic activity of various samples of arspenamin was found to vary in a general way as did the toxicity, when the latter depended upon variations in the conditions of reduction of the nitre to the amino group in the preparation of the sample. On shaking in alkaline solution, the hemolytic properties of a given sample decrease, often disappearing altogether. "Arsenoxide" is non-hemolytic. The sodium salts of various substituted phenylarsenic acids related to arspenamin are non-hemolytic. Warming a sample of disodium arspenamin to 55° C. (131° F.) decreases its hemolytic activity. Warming the hydrochlorid causes comparatively little diminution of hemolytic power when tested after being changed to a disodium salt.

The hemolytic power of dihydroxyarsenobenzene (in 1 per cent solution as sodium salt) is nil, but the introduction of amino groups causes the resulting compounds to acquire hemolytic properties in direct proportion to the number of amino groups introduced. The antihemolytic action of arspenamin is similar to that described for sodium arsenate and arsenite when tested against chemical hemolytic agents; none of these substances exert an antihemolytic action

against rabbit hemolysin. The presence of serum inhibits hemolysis by arsphenamin.

C. A. SCHMID.

HIRSCH, E. F.: Hydrogen-ion Studies. (A.) Hydrogen-ion Changes in the Agglutination of Bacteria by Immune Serum. (B.) Changes in Reaction Accompanying the Precipitation of Colloidal Gold by Spinal Fluid (Lange Test). (C.) Changes in Reaction of Blood in Experimental Infection (with J. Lisle Williams). (D.) Hydrogen-ion Changes on Precipitation of Human Serum by Immune Serum. *American Journal of Infectious Diseases*, June, 1922, xxx, No. 6, pp. 651, 658, 664 and 666.

(A) Bacteria suspended in normal salt solution behave chemically and electrically like the anion of the salt of a strong base and a weak acid. When bacteria are agglutinated by homologous immune serum, the medium in which this reaction occurs increases in alkalinity. This change in reaction is regarded to result from difference in the dissociation constants of the reacting substances and their products.

(B) The agglutination of colloidal gold particles by spinal fluid (Lange test) is accompanied by an increase in the alkalinity of the medium in which this reaction occurs. This change in reaction is similar to that observed on the agglutination of bacteria by homologous immune serum.

(C) The intravenous injection of pathogenic bacteria into rabbits diminishes the alkalinity of the blood as well as the alkaline reserve. The hydrogen-ion concentration of the blood may become so great that the reaction becomes slightly acid.

(D) The precipitation of human serum by homologous immune serum is accompanied by an increase in the alkalinity of the medium similar to that observed on the agglutination of bacteria by immune serum and on the precipitation of colloidal gold by spinal fluid.

M. M. BANOWITCH.

EBELING, A. H.: A Ten-year-old Strain of Fibroblasts. *Journal of Experimental Medicine*, June, 1922, xxxv, No. 6, p. 755.

Ebeling describes a strain of fibroblasts, obtained from the heart of a chick embryo, which has completed the tenth year of its life in



vitro, representing the 1860th generation of the connective tissue cells. The growth of the tissue fragments is as rapid today as during the past years. Each fragment generally doubles its volume in 48 hours. The cultures have not modified their appearance.

The fact that fibroblasts have been kept in active condition for 10 years demonstrates that tissue cells living in vitro transform the foodstuffs of their medium into protoplasm, and that, inasmuch as the limit of life of chickens is often 10 years, the cells are potentially immortal. It appears established that fibroblasts will proliferate indefinitely, as do colonies of Infusoria.

H. M. FEINBLATT.

OLITSKY, P. K., AND GATES, F. L.: **Experimental Studies of the Nasopharyngeal Secretions from Influenza Patients. VIII. Further Observations on the Cultural and Morphological Characters of *Bacterium Pneumosintes*.** *The Journal of Experimental Medicine*, June, 1922, xxxv, No. 6, p. 813.

The *Bacterium pneumosintes*, an organism derived from the nasopharyngeal washings of patients in the early hours of acute epidemic influenza, is a minute bacilloid body of regular form, with a length about two to three times its breadth, measuring 0.15 to 0.3 micron in the long axis. The organisms show little tendency to pleomorphism and are characterized by uniformity in size and shape.

After artificial cultivation for a period of over three years *Bacterium pneumosintes* has maintained its original morphological and cultural characteristics, when grown in the original medium (a tissue medium composed of human ascitic fluid and fresh rabbit kidney, sometimes with the addition of beef infusion broth and nutrient agar). During cultivation three strains have become saprophytic, so that at present they are cultivable anaerobically in a variety of media which are less difficult to prepare. Coincident with this adaptation to a new environment, certain variations in morphology and a loss of pathogenicity for rabbits have been observed.

The substitution of dextrose-peptone broth for ascitic fluid or serum in the medium results in a considerable change in the morphology. The bacteria are found in diplo form, or in chains of several members, and many of the individual organisms have increased in length so as to be obviously bacillary. Their genetic relationship to

the original minute forms of *Bacterium pneumosintes* is without question, and is evidenced by a specific agglutination reaction, their strictly anærobic character, and their reversion to the minute forms on transfer to the original medium.

H. M. FEINBLATT.

FELTON, L. D., AND DOUGHERTY, K. M.: **Study of the Action of Four Aromatic Cinchona Derivatives on Pneumococcus. A Comparison with Optochin.** *The Journal of Experimental Medicine*, June, 1922, xxxv, No. 6, p. 761.

Ethylhydrocuprein (optochin), as a chemotherapeutic agent against the pneumococcus, has been shown to influence beneficially experimental pneumococcus infection in mice but has been found of little value in man. These considerations suggested the investigation of the closely related cinchona derivatives synthesized by Jacobs and Heidelberg. Four chemicals hereafter designated by their laboratory numbers, were studied, *i. e.*, chloroacetylanilid (C 29), p-chloroacetylaminophenol (C 36), m-chloroacetylaminophenol (C 40), and 4-chloroacetylaminopyrocatechol (C 110). These substances are derived from the hydroquinin and not from the ethylhydrocuprein nucleus. They contain a combination of two bactericidal compounds, the quinins and benzenes.

Healthy young mice weighing from 15 to 18 grams (231.48 to 277.78 grains) were employed, and the Type I pneumococcus was the organism used. All four derivatives had a rapid pneumococcidal activity both in vitro and in the peritoneal cavity of mice. In comparison, optochin is slower in action, but its power is not so easily destroyed either in vitro or in vivo. The relation between organotropism and bacteriotropism varied. In comparing the rapidity of in vitro bactericidal action and intraperitoneal toxicity, C 29 exhibits the most rapid pneumococcidal action and is the most toxic for mice. C 36 is one-fifth as toxic as C 29 and only one-tenth less active bactericidally. C 40 is one-half as toxic and has approximately the same bactericidal power, while C 110 is one-eighth as toxic and has one-fifth the bactericidal action. Arranged in the order of their ability to kill pneumococci when injected simultaneously with them into the peritoneal cavity, the drugs are: C 40, C 110, C 36, optochin, and C 29.



The chemotherapeutic action of the aromatic compounds is essentially local in character. Intravenous injection of the drugs destroyed to a greater or less extent the natural defences of the animal, optochin being perhaps less injurious than the aromatic compounds. The maximum tolerant dose in a single injection (intra-peritoneal) is not so efficacious as the same dose divided in fifths and injected at hour intervals.

**TYZZER, E. E., AND FABYAN, M.:** A Further Inquiry Into the Source of the Virus in Blackhead of Turkeys, Together with Observations on the Administration of Ipecac and Sulphur. *The Journal of Experimental Medicine*, June, 1922, xxxv, No. 6, p. 791.

Experimental evidence obtained in this investigation suggested that the ovum of the *Heterakis papillosa* is an important source of the virus in the natural transmission of blackhead of turkeys. It is possible to occasionally produce blackhead in turkeys by feeding large amounts of the virus alone, as obtained in liver lesions. The intentional contamination of the food of young turkeys with dirt taken from hen yards invariably produced blackhead.

Under experimental conditions a large proportion of the *Heterakis* ova fail to hatch out in the intestine, but, passing through, may be taken up later with contaminated food. Ipecac is found to be of no value in the control of blackhead. Sulfur administered daily in large amount, possibly on account of its evacuant action, tends to delay infection.

H. M. FEINBLATT.

**KOPELOFF, N., AND MORSE, S.:** What Are the Atmospheric Moisture Requirements of Bacteria? *The Journal of Laboratory and Clinical Medicine*, June, 1922, vii, No. 9, p. 555.

The authors conclude that methods have been devised for controlling the atmospheric moisture conditions in the growth of bacteria. The results thus obtained indicate that bacteria have definite variations in rate of multiplication and amount of growth under changing conditions of moisture. In order to obtain characteristic colony formation and prevent the drying out of media, it is essential that an adequate supply of moisture be present in the bacteriologic incubator.

C. M. ANDERSON.

STEVENS, F. A., AND WEST, R.: **The Peptase, Lipase and Invertase of Hemolytic Streptococcus.** *Journal of Experimental Medicine*, June, 1922, xxxv, No. 6, p. 823.

A method is outlined by which the enzymes of hemolytic streptococcus may be extracted with considerable ease. The peptolytic enzyme is active between pH 4.4 and 8.7 with an optimum action at pH 7.2. Concentration experiments with solutions of the enzyme have shown that it resembles other enzymes. It is exceedingly susceptible to chloroform. It attacks casein but not serum albumin. The invertase is active between approximately pH 5.0 and 8.0 with an optimum of pH 7.0. The lipase is active above pH 5.6 with an optimum at pH 7.9.

H. M. FEINBLATT.

KRUMBHAAR, E. B., AND CHANUTIN, A.: **Studies on Experimental Plethora in Dogs and Rabbits.** *The Journal of Experimental Medicine*, June, 1922, xxxv, No. 6, p. 847.

Study was made of the functional changes produced by repeated transfusions in the blood-making and blood-destroying apparatus and in metabolism, and also the structural changes in the viscera of dogs and rabbits. Seven dogs were rendered plethoric by daily transfusions of 25 to 200 c. c. of whole blood taken from six compatible donors in rotation. The hemoglobin curve was studied, the urobilin determination was used as an index to blood destruction, and the bone marrow activity was gauged by estimating the percentage of reticulated or "skeined" erythrocytes. The test animals gained in weight during the experiment, while the donors became only slightly anemic with only a small rise in the percentage of reticulocytes. Removal of the spleen was performed under ether anesthesia without noteworthy loss of blood. These investigations showed that the excess blood is destroyed as rapidly by the splenectomized as by the normal dogs, after ceasing the transfusions.

Plethoric anemia, developing in spite of and probably on account of continued transfusions, is characterized by a marked fall in hemoglobin and red blood cells with at first little reticulocyte evidence of regeneration. At this time there is great blood destruction and elimination, as measured by the urobilin excretion. In four dogs



studied, the blood volume was, as might be expected, greatly increased above normal in the plethoric stage and decreased below normal in the anemic stage.

Blood pigment, chiefly in the form of hemosiderin, is deposited in enormous quantities in the spleen, liver, lymph nodes, and bone marrow. It occurs chiefly in phagocytes, though in late stages large extracellular masses are found.

H. M. FEINBLATT.

HAMMETT, F. S.: *Studies of the Parathyroid Apparatus. V. The Significance of the Comparative Mortality Rates of Parathyroid-ectomized Wild Norway Rats and Excitable and Non-excitable Albino Rats.* *Endocrinology*, March, 1922, vi, No. 2, p. 221.

There are at present three theories as to the cause of the tetany occurring in animals following parathyroidectomy.

(1) The theory of calcium deficiency, resulting in a disturbance of the ion equilibrium of the blood and a resultant increase of nerve irritability.

(2) The theory that tetany is due to a disturbance of the acid-base equilibrium of the blood.

(3) Tetany is a result of a toxemia due to the presence of a guanidin compound resulting from protein catabolism.

From the available data it is more reasonable to believe that when the parathyroids are removed, the organism loses in great part its capacity to get rid of the toxic nerve irritant, guanidin or methyl-guanidin, a product arising from the metabolism of the condition known as muscle tone. There is then set up a condition of heightened neural activity resulting in a disturbance of muscle activity. This leads to marked changes in the respiratory exchange, and from this arise changes in the blood, the ion equilibrium being upset along with the various other changes.

From the observations on the three groups of rats, certain general conclusions can be drawn. The mortality from parathyroid extirpation in wild Norway rats was 90 per cent; in gentle albino rats, 13 per cent; in untamed albino rats, 79 per cent. It is evident, that the more excitable the organism the higher is the neural and muscular tension, the greater is the instability, the greater is the production of toxic by-products, the greater is the need for the mechanism for get-

ting rid of these products and the greater is the dependence of the organism on the parathyroids in averting disturbances arising from these sources. The parathyroids do play some part in creatinin metabolism. Methylguanidin is de-acetylated creatinin. When the parathyroids are removed it is possible that the chief agency for detoxicating the guanidin compound is removed, and as should be expected, the acute toxemia was found in those animals most highly excitable, and the lower toxemia in the more gentle animals, where the muscle tone is low.

L. C. JOHNSON.

WHIPPLE, G. H.: **Pigment Metabolism and Regeneration of Hemoglobin in the Body.** *Archives of Internal Medicine*, June, 1922, xxix, No. 6, p. 711.

Whipple's Harvey Lecture covers the subject of pigment metabolism, with special reference to the newer work. This work shows the fallacy of the old theory in regard to pigment metabolism. The old theory supposed that the hemoglobin was manufactured from iron and food elements in the bone marrow, that on destruction of the erythrocytes the hemoglobin was changed in the liver to bile pigments which were excreted in the bile, that these pigments were changed in the intestine to stercobilin some of which was reabsorbed and again utilized for bile pigment, but that if the liver were inadequate it might escape the portal blood stream and be excreted in the urine as urobilin.

The newer conception supposes the existence of a "pigment complex" which is the source of all the body pigments. It has a multiple source including the food, the body cells, and perhaps to some extent the hemoglobin of destroyed red cells. From it are derived separately the hemoglobin, the bile pigments, and possibly urochrome and urobilin. The bile pigments come in part also from the hemoglobin, contribute to the formation of urobilin, and of course constitute the sole source of stercobilin. The feeding of bile pigment or hemoglobin has no effect upon the output of bile pigment in a dog with a biliary fistula. Bile pigment output depends upon liver activity and is not solely a passive elimination of defunct hemoglobin. There is evidence that stercobilin is not absorbed from the intestine, and that urobilin as observed in the urine is formed in the liver or body



tissues, not absorbed from the intestine. Urochrome is but little understood. It may represent a shunt for pigment building material not utilized in the body.

Experiments are recorded bearing on hemoglobin regeneration following induced anemia in dogs. It was found that the most potent factors in the diet were red meat and cooked liver, hemoglobin, and butter fat. Next came spinach and full diets of common food grains and milk. Other chlorophyll containing vegetables, as celery, parsley, beet tops and sprouts were practically inert. Fish and clams, onions, beets, and animal fats, including lard and cod liver oil were also inert. Iron and arsenic under these conditions proved to be of no service.

Pernicious anemia is considered from the standpoint of pigment metabolism. It is not noted that an excess of pigment is found everywhere in the body, in the liver cells, bone marrow, blood stream, feces, and at times in the urine. The erythrocytes contain more hemoglobin than normal cells. Pigment metabolism then is overactive. The author considers this to be the explanation of the excess of stercobilin, rather than excessive hemolysis. He cites a hypothetical typical case in which the red cells are 1,000,000, or one-fifth of normal, while the stercobilin is two or three times the normal amount. To produce this amount of stercobilin the reduced number of red cells would have to be destroyed ten to fifteen times as fast as in the normal individual. The normal replacement factor for red cells is believed to be about 3 per cent per day and under the circumstances described it would amount to 30 to 40 per cent per day. The author comments that "those who wish to accept this explanation are welcome to do so, but it would be a fleeting and troublous life period endured by the red cell in pernicious anemia." He believes that the most reasonable explanation of pernicious anemia would be a disease of the stroma-forming cells of the marrow, or of the stroma building material, which would limit the output of red cell framework despite the presence of an excess of pigment.

Hemochromatosis is another disease showing disturbance in the pigment metabolism. But little is known about it. The hypothesis that it is due to increased blood destruction has no evidence to support it. The output of stercobilin seems to be normal in some cases, but it may be that there is some block in pigment elimination. There is also probably an increased pigment formation. Further studies of

both of these diseases are highly desirable. Such studies should be sufficiently comprehensive to include simultaneous observations of the pigment elements in the blood, feces, and urine, as well as in the bile and body tissues wherever possible.

T. HOWARD.

GILBERT, R., AND MOORE, A. C.: **Widal Technic Using Sterilized Cultures.** *The Journal of Laboratory and Clinical Medicine*, June, 1922, vii, No. 9, p. 547.

Specimens of blood in capillary tubes for the agglutination test in the diagnosis of typhoid fever are often received at laboratories in such unsatisfactory condition, that for the purpose of large public health laboratories it has been necessary to require that specimens of dried blood be sent for diagnosis. These specimens were found unsatisfactory for a microscopic test, due probably to the cultures having been overgrown or contaminated.

By experimental work it was found that killed cultures of *Bacillus typhosus* proved unsatisfactory for the microscopic agglutination test for typhoid, but they were satisfactory for the macroscopic agglutination tests. If more comparable results are to be obtained in different laboratories, it may be desirable to have carefully standardized killed cultures prepared at a central laboratory for distribution. If this were done, it would be necessary to adopt the macroscopic technic for performing the test.

C. M. ANDERSON.

GIORDANA, A. S., AND BARNES, A. R.: **Studies in Postmortem Bacteriology: Value and Importance of Cultures Made Postmortem.** *The Journal of Laboratory and Clinical Medicine*, June, 1922, vii, No. 9, p. 538.

Bacteriologic cultures were made postmortem in 213 cases. The blood was cultured in 206 cases and it was positive in 80 cases (38.8 per cent). The spleen was cultured in 190 cases and was positive in 75 cases (39.4 per cent). The spleen serves as well as, if not better than, the heart's blood for determining a terminal bacteremia. If discrepancies occurred in the results obtained by antemortem and postmortem cultures, these discrepancies were generally explained by



the evidence of a superimposed process revealed at autopsy. Uniformly negative results secured in the cases of our series, which are ordinarily regarded as noninfectious in type, strengthens the author's belief in the reliability of cultures made postmortem. A failure to obtain positive blood cultures in 51 cases, in which an abundant focus of infection was demonstrated at necropsy, leads us to believe that invasion of the blood stream after death rarely occurs. Postmortem bacteriology may strengthen, illuminate, or sharply modify the cause of death, as revealed by clinical and necropsy diagnoses. It is possible that terminal invasion may occur, and if it does occur it must not be dismissed, as it may be the most important contributory factor to the cause of death. A sustained, progressive increase in the number of positive results obtained at successive hours after death has not been observed in the cases covered. With strict adherence to a reliable technic, postmortem bacteriologic findings are extremely valuable. The most is not made of the necropsy table unless routine cultures are made.

C. M. ANDERSON.

BLOEDORN, W. A., AND HOUGHTON, J. E.: **The Role of Hexamethylenamina in the Production of Hematuria.** *The Journal of Laboratory and Clinical Medicine*, June, 1922, vii. No. 9, p. 514.

Five cases of hematuria developed among approximately 400 cases of mild influenza who received from 30 to 60 grains (1.95 to 3.88 grams) a day of hexamethylenamina. The hematuria in these patients appeared in one to seven days following the administration of the drug. All of these patients showed a high hydrogen-ion concentration of the urine. In an attempt to demonstrate an idiosyncrasy to hexamethylenamina in these patients, the drug was applied in varying dilutions to the slightly abraded skin of the forearm and in each case a reaction consisting of redness, induration and the production of a raised area, was noted. The urine showed no blood casts; there were no constitutional symptoms and no sequelae. The bladder showed definite hemorrhagic lesions through the cystoscope. These hemorrhagic areas were irregularly distributed over the base of the bladder and about the ureters, the vault and lateral surfaces being unaffected. Attempts to produce hematuria in individuals who showed a high hydrogen-ion concentration of the urine were unsuccessful. Even

when the  $P_{H}$  of the urine was kept low by the administration of acid sodium phosphate it was possible to produce hematuria when hexamethylenamina was given in doses of grams 4 (61.73 grains) daily for eight days. The administration of sodium bicarbonate grams 10 (154.32 grains) daily in conjunction with the hexamethylenamina served to prevent the liberation of formaldehyd in the urine in almost every instance. The drug is toxic to guinea pigs and in doses of 20 mg. (.308 grains) a day produced a hematuria in from two to seven days. The lesions in the guinea pigs are wide-spread and there is definite evidence of acute inflammatory processes involving the genito-urinary and gastro-intestinal tract with marked acute nephritis and acute congestion of the bladder. The hematuria in the guinea pig is of renal origin, although the bladder may also act as a contributing source.

C. M. ANDERSON.

RABINOWITCH, I. M.: **Biochemical Studies in a Fatal Case of Methyl Alcohol Poisoning.** *Archives of Internal Medicine*, June, 1922, xxix, p. 821.

Routine chemical studies were carried out in the case of a woman of seventy years who drank a glass of wood alcohol with suicidal intent. The patient lived 6 days, finally developing a bronchopneumonia. Studies of the blood showed a rapid accumulation of uric acid, urea N., and creatinin, the final figures being 9.3, 144, and 4.5 mg. per 100 c. c., respectively. This indicated a "kidney block" which was substantiated at autopsy, when there was demonstrated an "acute parenchymatous nephritis". The blood sugar also showed considerable increase, the figures running uniformly about 228 mg. (3.512 grains). This was interpreted as probably being due to retention. An acidosis was in evidence clinically, and this was estimated by routine calculations of the  $CO_2$  combining power of the plasma, which fell from 46 per cent on admission to 26 per cent just before death. That this was in part due to retention of the acid phosphates was shown by the finding of abnormal amounts of these bodies in the blood. Theoretical explanations of the acidosis of methyl alcohol poisoning include the possibilities of the formation of formic acid from the alcohol, the formation of methylen derivatives from the action of the formaldehyde on amino-acids, and the produc-



tion of free acids from the action of formaldehyde on neutral ammonium salts. The author does not discuss the possibility of a ketonemia, which is also suggested by the presence of acetone in the one specimen of urine which they were able to obtain. Cyanosis was a marked feature of the case, but the author was unable to ascertain its origin. He failed to find methemoglobin in two examinations. At autopsy methyl alcohol was detected in the tissues, six days after its ingestion.

T. HOWARD.

KNOX, R.: **Radium Therapy.** *British Medical Journal*, April 22, 1922, No. 3199, p. 631.

A great deal of unnecessary discussion has arisen over the relative value of x-rays and radium. Given an equal wave length from either medium, the effect will be the same. The x-ray value has been limited by the inability of the apparatus to generate the high voltage necessary to produce x-rays equal to the gamma rays of radium which represent the extreme limits of penetration. Radium is the prominent member of the uranium series of radio-active elements; its parent is ionium, and its disintegration product is radium emanation. Radium emanation has a steady decay period; it falls to half value in 5 days, and when using the emanation in treatment the decay value has to be taken into account in estimating the exposure. Three types of rays are given off; alpha, beta and gamma. The alpha ray is not used to any extent, and the beta and gamma rays are the most active. They induce changes in the tissues which are most important from the therapeutic point of view. Beta rays are negative electrons shot out from the nucleus of the transmitting radium atom with a velocity which in some cases is nearly that of light. 10 mm. of tissue or 1 mm. of lead or silver will absorb 99.9 per cent of these rays. Gamma rays are ether vibrations of very short wave-lengths (therefore similar to x-rays) and are caused by rapid vibrations set up in electrons in the structure of the transmitting element by the electrostatic repulsion between the electron and the escaping high-speed beta ray. Secondary rays are formed when these primary rays impinge upon matter. The alpha rays give rise to a delta ray, and secondary beta rays are produced in matter by the absorption of the gamma rays. The physiological effects of the radiations of the radio-active

substances are attributable to the "photo-electric" effect, that is, the liberation in the structure of the tissue cells of negative electrons. In the case of primary beta rays, which are negative electrons their absorption in tissues is sufficient to start the action. Gamma rays, by their action in evicting secondary beta rays, produce a similar action by the absorption of these secondary beta rays. The physiological effect of the gamma rays is limited to a distance of 2 to 3 cm. in the treatment of malignant growths, where the dose required to induce the disappearance of the new growth is one which will almost produce a similar effect on normal tissue. In non-malignant conditions radium is remarkably successful in treating angiomas of all sizes. In uterine fibroids, radium or x-ray should be the agent of choice in about 40 per cent of cases and in uterine hemorrhage it is almost specific, but these cases should only be treated after consultation with a gynecologist. The leukemias offer a large palliative field for radium, the spleen being rayed, and transfusion employed if necessary. Radiation has also shown remarkable results in treating tuberculous adenitis. In malignant cases, radiation is the agent of choice when operation has been decided against, in skin cancer. Epithelioma however, being difficult to control yields only palliative results. In advanced cases of cancer about the face, radiation and x-rays are used over the lesion and the glands of the neck and mediastinum. Cancer of the esophagus is a radium case unless seen very early, and care must be employed in radiation. In cancer of the stomach the difficulties of placing radium in that organ have not been overcome. Early cancer of the breast is considered surgical, and radium has rendered seemingly inoperable cases, operable. Cancer of the rectum is a condition not treated satisfactorily from any standpoint. If it is inoperable it should be treated by radium and x-rays and colotomy should be performed to prevent irritation to the parts. If cancer of the prostate is inoperable, it may be treated by the use of radium needles *via* the perineum, or the cross-fire method *via* rectum and urethra. Early cancer of the fundus uteri is a surgical condition if the patient is in condition to stand a radical operation; otherwise it is a case for radium, and no case, however severe should be denied the palliative action of radium. In a large proportion of carcinoma of the mamma the end condition is one of mediastinal involvement, which is a hopeless condition to deal with. The last of the involvements is the occurrence of bone metastases, and these are more com-



mon than is suspected. Involvement of the bone may occur within 5 years of the primary lesion, but seldom before, and it may appear at a much later date. From the point of view of ray therapy it is a most hopeless condition. Nor is it likely that radiation can prevent the spread to the osseous system, unless the primary dosage can be large enough to clear up the primary growth. With few exceptions, operation is the treatment of first choice for cancer, but at operation radium should be used, placing it in positions which are likely to contain residual cells.

L. C. JOHNSON.

CARTER, C. E.: **A Simple Method of Counting the Cells in Cerebrospinal Fluid.** *The Journal of Laboratory and Clinical Medicine*, June, 1922, vii, No. 9, p. 555.

The author uses the Levy counting chamber with double Neubauer rulings. The diluting fluid is that recommended by Levinson, (methyl violet 0.2 gram, glacial acetic acid 5 c. c. and water to make 100 c. c.). With a pipette (1 c. c.) accurately mix equal parts of cerebrospinal fluid and diluting fluid (.5 c. c. of each). Adjust cover of counting chamber and with a fine capillary pipette, allow preparation to flow over both rulings, using the same precautions as in making a preparation for a blood count. Let settle five minutes for the cells to stain and for the preparation to become even. Count all the cells in the four corner blocks of sixteen large squares used for counting white blood cells and the central block of four hundred small squares used for the red blood count. Move to the other ruling and repeat the process. The total number of cells counted multiplied by two gives the total cells per cubic millimeter. The high dry lens is used so that the cells are not mistaken for debris and the differential count may be performed at the same time.

C. M. ANDERSON.

## SECTION ON PEDIATRICS

PERKINS, J.: A Study of Asthma. *Rhode Island Medical Journal*, 1922, v, 193.

Asthma is a disturbance of the vegetative nervous system, which is divided into the sympathetic. Imbalance of either one of these (which are opposed to each other), leads to various disturbances,—hay fever, vasomotor rhinitis, urticaria, eczema, angioneurotic edema, tachycardia, bronchitis, dreaming, abnormal eructations of gas, and also asthma. There are a multiplicity of excitants, as many proteins, changes in the weather, overexertion and excitement; and back of it all a basal condition which causes the susceptibility to these things. The author has been observing the possible causative factor in the thyroid during the past six years, especially of late by using the test of basal metabolism in all cases of asthma or nerve symptoms associated with asthma, finding that there is an increased basal metabolism in these cases. These cases can be cured if not too long standing and if the treatment is continued long enough.

Treatment is first directed to removing the causes of dysfunction, then to treating the glands themselves with thyroid extract if hypothyroidism, with removal or x-ray if hyperthyroidism, and finally to treat the effects of abnormal action. This treatment is especially efficient in the young as is illustrated by the following cases.

CASE I.—Girl, age 17, suffered from asthma for 4 or 5 years, gradually growing worse. Sensitive to eggs, milk, ham sandwiches, chocolates and onions, as well as to tobacco smoke or anything frying. Eczema on face and hands during the attacks. Examination showed that the generative organs were undeveloped, basal metabolism plus 25 per cent and plus 30 per cent; thyroid palpable and hard.



Within seven months under proper endocrine treatment she was free from attack and was eating eggs and chocolate.

CASE II.—Girl, age 20, with inherited tendency from the paternal grandfather; had eczema when a baby; has had asthma for the previous year, has to be up three nights a week from 2 to 4 a. m. following exposure to dust, steam, excitement, storms, etc. Examination showed pulse 100, temperature 99.6° F.; blood-pressure 125/85; wheezing râles over both lungs; expansion poor; both lobes of thyroid enlarged; basal metabolism 28 per cent plus. Treatment by the x-ray brought steady improvement and the basal rate was 1 per cent on the next test, with but three attacks of asthma in three months; but one severe which followed great excitement.

CASE III.—Girl, age 6, with a marked family history; mother's great-great-grand father had bronchitis for forty years, great-grandmother extremely neurotic, grandmother very nervous all her life, with bronchial cough for years before her death aged 60; her grandfather had a nervous breakdown when 31; one uncle and two aunts had neuritis, and the aunts bronchial colds frequently; one wheezes in damp weather; one uncle and aunt have severe headaches; another aunt had chorea and nervousness when young; her mother has a very nervous temperament, and a basal metabolism of plus 30 per cent; her father has hay fever badly and has been taking the vaccine treatment for a number of years. Further there are a number of cases of asthma, hay fever, and other nerve disturbances in the father's family. The patient herself had severe eczema at one year of age, occasionally since; now suffers from terrifying dreams; always has wheezing in damp weather, and has frequent attacks of asthma and occasional attacks of bronchial pneumonia. At the time of examination had been wheezing since the past three months. Examinations showed acetone in the urine and much running from the nose, wheezing râles in the chest; she cried and sobbed easily. Under full treatment has remained in good condition for the past 11 months, no wheezing for 8 months, even on damp days for the first time in her life.

The author acknowledges that all cases do not come under the endocrine system classification; some are apparently due to the psychoses.

NEFF, F. C.: **Temperature Variability in Certain Apparently Normal Children.** *Southern Medical Journal*, April, 1922, xv, No. 4, p. 268.

The author concludes that in certain children it is difficult to find the explanation for slight elevations of temperature. After the examination of 158 crying children the temperature was found elevated from .2° to 1° F. in 39 per cent. With 88 children similarly examined but not crying, there was a like elevation of temperature in 10 per cent. Some of these were apprehensive or excited. In definitely underweight children the percentage showing variation after examination was somewhat higher, both in the crying and non-crying group. It would seem for purposes of accuracy that the temperature of the child should be taken if possible when no excitement has occurred.

G. DISTLER.

MORSE, J. L.: **Leukemia and Severe Anemia in Childhood. A Study of Thirty-seven Cases.** *The Boston Medical and Surgical Journal*, May 18, 1922, clxxvi, No. 2, p. 657.

This study is based upon the study of 37 cases of leukemia and severe anemia in childhood seen in the past twenty-five years. No cases in infancy have been included. Hemophilia and the purpuras have been excluded as well as cases apparently secondary to hemorrhage from other causes, and also cases apparently due to sepsis. While the observations are not by any means complete due to a number of reasons, nevertheless an analysis of this series shows a number of points of interest. Myelogenous leukemia was diagnosed but once in a boy four years old, and then on the findings of an incomplete autopsy, showing the rarity of this condition in childhood. There were 12 cases of undoubted lymphatic leukemia, of these 4 were males. The age varied between 2 and 13, average 6 years. The duration of the disease varied from 3 to 12 weeks, average 8 weeks, showing that in childhood lymphatic leukemia almost always runs an acute course. More common than either of the above is a very severe and rapidly fatal type of anemia, in which there is profound depression of all the functions of the bone marrow. In certain instances there may be associated with it an increase in the productiveness of the lymphatic organs. The line between this condition and lymphatic leukemia is



at times somewhat indistinct. It strongly resembles, if it is not identical with the aplastic anemia of adults. Its relations to the purpuras can only be determined by more careful study by modern methods. Its etiology is not evident but analogy suggests that it may be the result of intoxication or infection. The ordinary type of pernicious anemia of adults is extremely rare in childhood.

M. M. BANOWITCH.

COOKE, J. V.: **The Transmission of Complement-Fixing Substances from Mother to Child.** *American Review of Tuberculosis*, April, 1922, vi, No. 2, p. 127.

The complement fixing bodies present in the mother's serum may be transmitted to her offspring and persist in the infant's blood for a certain number of weeks. In most instances they have disappeared by the end of the second month, and always by the end of the third month. When a young infant's blood gives a positive complement fixation test for tuberculosis, this reaction is not an evidence of tuberculous infection in the infant since these fixing-substances are not formed during the first year of life. The presence of such fixation is only noted in young infants when transferred from the mother. The transmission of complement fixing antibodies in tuberculosis is not accompanied by a transmission of substances which render the skin sensitive to tuberculin.

C. A. SCHMID.

GORDON, M. B.: **Childhood Myxedema or So-called Sporadic Cretinism in North America.** *Endocrinology*, March, 1922, vi, No. 2, p. 235.

Cretinism as it exists in Europe does not exist in America. Not a single case of pure endemic cretinism has ever been reported in America. The sporadic cretinism as encountered in Europe differs from what has been termed the same disease here. There seems to be such an indefinite understanding as to just what is meant by the term, sporadic cretinism that it seems wise to dispense with it, at least in America, and to restrict the term cretinism to the endemic type found in Europe and Asia. The so-called sporadic cretinism of America is really an intense and exaggerated form of hypothyroidism,

and should be known by the term of childhood myxedema. This is not uncommon in America, and the incidence of the disease is probably greater than indicated by the 340 cases studied. Of these, 4 were of the congenital myxedematous type, 31, of the juvenile type, and the remainder of the infantile type. The greatest number of cases were found in New York and Pennsylvania, which finding is probably due to the large immigrant population in the two states. Geographical location had no apparent bearing upon the prevalence of the disease. Hereditary influence appears also to be of little etiological importance, though there were several instances of more than one case of childhood myxedema in the same family. The incidence in females was twice as great as in males. Treatment with thyroid gland products is of great though not unfailing benefit. Some cases are curable. Mental retardation is not so amenable to treatment as physical deficiency. Prognosis depends upon the age at which treatment is begun, and upon the regularity and continuance of treatment.

L. C. JOHNSON.

DODDS, E. C.: **Evidence of Pancreatic Disorder in Rickets.** *British Medical Journal*, April 1, 1922, No. 3196, p. 511.

In 17 cases of acute rickets the urine had a high diastatic power, an average of 154 units, as compared to the normal of 6 to 30 units. The fat content of the stools also was greatly elevated, with an average of 75 per cent of the bulk of the stool, against a normal figure of 25 per cent. Nine of 10 cases of acute rickets also gave a very strong test in the urine for acetone, and it seems that rickets should be added to the list of diseases in which this condition occurs. These two findings have led to the consideration of disorder of the pancreas as a large factor in rickets, and pancreatic extract has been used in treatment, with particular attention to the lipase content of the extract. It has been taught for some time that the fatty acids when liberated from the neutral fats by the action of the pancreatic lipase, form soaps with the metallic bases, especially with calcium. The resulting calcium soap being soluble in bile is absorbed. If this is the most important mode of calcium absorption, the importance of inadequate pancreatic secretion at once becomes obvious, because there would be poor fat digestion, and consequently poor production of fatty acids. This would lead to deficient calcium absorption and



therefore to calcium starvation, which has been stated to occur in rickets. The experiments are in too early a stage to warrant a more definite statement.

L. C. JOHNSON.

STOELTZNER, W.: Goat Milk Anemia (Über Ziegenmilchanämie), *Munchener Medizinische Wochenschrift*, January 1922, Lxix, No. 1, p. 4.

In the past year the author noticed an increasing number of cases of anemia in the city of Halle occurring in children nourished on goat's milk. Dr. Johanna Schwenke called attention, in 1918, to a type of anemia resembling pseudoleukemia in children of Breslau who were fed on goat's milk. In 1919, Bluhdorn of Breslau, made a similar observation. The anemias may be of the simple hemolytic type or of the pseudoleukemia infantum type. The latter type was associated with rickets.

Goat's milk contains eight times as much soluble fatty acids as human milk and the author thinks these may have a hemolytic action.

H. JOACHIM.

## SECTION ON NEUROLOGY AND PSYCHIATRY

BLACK, HUPPER AND ROGERS.: **The Effects of Adrenal Feeding upon the Iodin Content of the Thyroid Gland.** *American Journal of Physiology*, February, 1922, lix, 222-226.

A somewhat hydrolyzed aqueous extract of the entire beef adrenal gland known as the adrenal residue, when fed by mouth, can produce in 45 days a gain in the iodine content of the dog's thyroid gland amounting on the average to 70.4 per cent. The adrenal nucleoprotein material obtained from the entire beef adrenal gland, when fed in large dosage, shows an average increase of 50.7 per cent of the iodine content. An amount of crystals of adrenal (Parke, Davis & Co.) which is, closely equivalent in amount to the epinephrin-like material of the adrenal residue produces little if any gain in the iodine content of the dog's thyroid. An extract of the entire gland containing something more than pure epinephrin has thus been demonstrated to have a direct effect upon the thyroid gland.

McGARRISON, R.: **Simple Goiter.** *British Medical Journal*, April 22, 1922, No. 3199, p. 636.

Simple goiter is a deficiency disease due to an insufficient supply of iodine for the needs of the thyroid gland, or more properly for the needs of the body cells for the gland's iodine-containing hormone. This supply of iodine is dependent upon a multiplicity of factors, both extrinsic, and intrinsic. It is dependent upon the iodine content of the food and water, which in turn is dependent upon altitude, distance from the sea-coast, and the iodine content of the soil. In the body, the supply of iodine to the thyroid gland is dependent upon the adequate absorption and assimilation of iodine.



This in turn is influenced by factors, such as, disordered function of the gastro-intestinal tract, and bacterial intervention in the digestive tube. The needs of the thyroid gland for iodine are dependent on the needs of the body cells for the iodine-containing hormone, and these in turn involve, food balance (excess of fats, increasing the needs for iodine), metabolic variations, age, sex, puberty, sexual activity, pregnancy, infection, menstruation, and season. One must consider also the ability of the thyroid gland to utilize iodine, which involves, heredity, and excessive stimulation of the gland, which may be induced by nervous, toxic, or infectious influences; and impairment of its function, which may be influenced hereditarily, or by toxic or microbial agents, the two last being frequently of gastro-intestinal origin. While goiter is theoretically due to insufficiency of iodine, it is due in practice to a combination of factors which together bring about this insufficiency. Our present knowledge of simple goiter is sufficiently definite to secure its prevention and cure. It is pre-eminently a condition which need not exist in any country, if this knowledge be utilized. In India in a large school where goiter was very prevalent, it was demonstrated that it was due to a contaminated (bacteriologically) water supply; 65 per cent of girls and 45 per cent of boys over 16 years of age were goitrous, and a residence of 8 years in the school rendered 80 per cent of the pupils so. Introduction of a pure water supply has caused the complete disappearance of the condition in the school. The prevention of goiter is a matter of general hygienic conditions of life, attention to food and water supply, and to the varying needs of the body for iodine.

L. C. JOHNSON.

STOKES, J. H., AND MCFARLAND, A. R.: **Comparative Clinical Observations in Involvement of the Nervous System in Various Phases of Syphilis.** *American Journal of Syphilis*, vi, No. 2, p. 169.

A comparative study of the results of spinal fluid examination in four groups of syphilitic patients, two with early and late secondary syphilis, one representing a cross section of internal medical work in the Mayo Clinic and one of late syphilis in a consultant syphilologic practice yields the following conclusions:

(1) Treatment and time are important factors in the statistical estimates of the proportion of abnormal spinal fluids in syphilis. In

very early untreated secondary cases the proportion of positive findings, specific and nonspecific, may reach 60 to 70 per cent, falling to 40 per cent within the first six months, and to 25 or 30 per cent after the first year or two. From this time on the decline is more gradual.

(2) Treatment of incipient neurosyphilis within the first two years, if intensive, causes a rapid and marked response in many cases. Even relatively ineffective treatment causes temporary gains and a certain degree of spontaneous involution may perhaps also be expected. This is, therefore, the period on which our best therapeutic energies should be concentrated.

(3) The rise in cell count evidencing meningeal reaction is the earliest and commonest change in the spinal fluid in secondary syphilis in our experience. While not necessarily specific for syphilis of the nervous system, it is safer to regard it as an evidence of early syphilitic meningitis and treat it accordingly than to disregard it. This meningeal reaction is followed by an increase in globulin content and, finally, by a positive Wassermann reaction. The use of considerable amounts of spinal fluid in the Wassermann test is essential at this stage in order to detect the positive Wassermann on the spinal fluids.

(4) There is no parallelism between early symptoms and spinal fluid findings which can be safely used as a guide to the advisability of examination of the spinal fluid. The examination should, therefore, be made routinely.

(5) Symptoms and signs are to be regarded as late rather than early manifestations of involvement of the nervous system. Only 16 per cent of early cases showed symptoms, as against 53 per cent in late secondary cases.

(6) The routine examination of the spinal fluid early in the first course of treatment (second or third arsphenamin injection) will give a valuable guide to the therapeutic indications in individual cases. It is preferable to later examination of the fluid.

(7) A patient with early syphilis under combined arsphenamin and mercurial treatment should not be discharged from a first course of treatment, or be placed on mercurialization alone without an examination of the spinal fluid. Even a slight pleocytosis may be a warning of meningeal involvement which will flare up in a neuro-recurrence if treatment is relaxed or suspended.



(8) Spinal puncture, we believe, should not be done in primary and secondary cases, early or late, without a preliminary sterilization of the blood stream by one or two arsphenamin injections to prevent a possible transfer of organisms to the meninges.

(9) Patients whose spinal fluid is normal during the early secondary period, show a distinct immunity from subsequent involvement especially if effective treatment is carried on. Neurosyphilitic involvement apparently takes form comparatively early in the course of the disease. A proportion of patients ranging from 40 to 50 per cent will have normal spinal fluid at all stages.

(10) The proportion of patients who have spinal fluid can be increased apparently 50 to 75 per cent over the average in early and late cases by effective treatment during the first two years of the disease. This is, then, the vital period of the disease from the therapeutic standpoint.

(11) The spinal fluid findings in both early untreated and late syphilis show a group of 16 to 18 per cent whose blood and spinal fluid appear normal.

(12) A proportion of patients varying from 5 to 8 per cent in early syphilis and from 14 to 41 per cent in late syphilis will present negative Wassermann reactions on the blood and abnormal spinal fluids. The proportion of patients with this important diagnostic combination will vary in different series with the duration of the infection, previous treatment, the character of the clientele, and the freedom with which the examination of the spinal fluid is used in the investigation of a clinical suspicion of syphilis.

(13) As a syphilitic infection progresses from the early to the late stages and as the form of involvement gives rise to symptoms, neurosyphilitic changes assume increasing importance. To a surprising degree neurosyphilis complicates or underlies the internal medical aspects of the disease. In its detection the examination of the spinal fluid may exceed any other single procedure in diagnostic importance and proportion of positive results. In the diagnostic work of the Mayo Clinic, for example, a proportion of only 45 to 50 per cent positive Wassermann reactions on the blood as compared with 60 to 70 per cent positive Wassermann reactions on the spinal fluid of syphilitics seems to be the rule.

M. M. BASOWITCH.

CADWALDER, W. B.: **A Clinical Report of Two Cases of Agenesis (Congenital Paralysis) of the Cranial Nerves.** *American Journal of Medical Sciences*, May, 1922, clxiii, No. 5, No. 602, p. 744.

In 1892, Möbius described forty-four cases of "Infantile Nuclear Atrophy". The author adds two more cases and suggests the term "aegnesis of the cranial nerves", to describe a lack of development of these structures. Although there are many terms employed to describe the condition, the essential point is that the defect is a congenital one. It is present at birth, although in some instances nothing abnormal may be discovered by the parents until some time has elapsed. The true nature of this type of paralysis becomes confused with conditions that are acquired after birth and that are due to other causes. The clinical diagnosis must necessarily depend upon the discovery of the lack of function early in life, *i. e.*, shortly after birth, and the exclusion of other causes of cranial nerve paralysis. Prognosis is necessarily unfavorable, and it would seem important to realize that such procedures as anastomosis with the hypoglossus for the restoration of function in the seventh nerves are useless.

A. T. MAYS.

AUB, J. C., AND TAYLOR, M.: **The Effect of Body Tissues Other Than the Thyroid upon the Basal Metabolic Rate.** *Endocrinology*, March, 1922, iv, No. 2, p. 255.

At present the one accurate test which indicates the activity of the glands of internal secretion, is the determination of the basal metabolic rate. The activity of the thyroid gland affects this most markedly. Other tissues in the body exert some influence upon the rate, but the variations which they produce are relatively small. The greatest is found in leukemia, when the basal metabolism is much above normal, 40 to 60 per cent in either the lymphatic or myelogenous type. In anemia there is a normal or slightly elevated metabolic rate. In the case of the pituitary gland, while there is in man a tendency toward an increased metabolic rate with hyperpituitarism, and toward a lowered rate with hypopituitarism, it is not clearly shown that these slight changes are caused primarily by the functional disturbances of the pituitary alone. Removal of the gonads often causes the metabolic rate to fall, and recent investigation suggests



that this may be due to some interrelation with the thyroid. The adrenal gland probably has a greater effect on the metabolic rate than is generally believed. As yet its action is not thoroughly explained. When the adrenals are affected, as in Addison's disease, or when both adrenal glands are removed, the metabolism is low. Injection of adrenalin is followed by a rapid increase in the basal metabolic rate. This and other unpublished data have led to the theory that the metabolism may be regulated by two mechanisms by the adrenals for rapid variations in rate, and by the thyroid for more sluggish, but more important changes.

L. C. JOHNSON.

HOLMES, G : **Clinical Symptoms of Cerebellar Disease.** *Lancet*, June 17, 1922, No. 5155, p. 1177.

The author has been able to study 25 cases of cerebellar tumors, the location of which was verified at operations. In addition 70 cases of wounds of the cerebellum resulting from gunshot injuries during the recent war were studied. The author presents these cases with the idea of perfecting cerebellar diagnosis, localization and function.

The first symptom studied was that of tone. Luciani first called attention to disturbances of muscle tonus. Ferrier, Babinski, André Thomas and Myers have been unable to detect any atonia. In one-sided destructive cerebellar lesions there is a homolateral lack of resistance when displacement of the limbs is attempted. The sensation to the examiner is similar to that of manipulating the extremities of a patient deeply anesthetized. In the lower extremities the patella can be easily depressed with the limb extended. This results from defective elastic tension which normally resists elongation or stretching of muscles. This permits a flail-like action of joints accompanied by jerky movements. The heel can be closely approximated to the buttock on flexion of the hip and knee. Affected limbs are unable to maintain any attitude if unsupported. The author concludes that cerebellar lesions diminish muscle-tone and diminishes muscular elasticity.

Facial muscles are rarely involved and proximal parts of limbs suffer more than the distal. The author has been unable to detect any anisothenia (hypotonicity of some muscles with increase of tone

of their antagonists). Pure cortical cerebellar lesions disturb muscle tone. Lesions of the vermis involve the trunk muscles.

The lack of tone appears almost immediately after an injury. If the lesion is small the muscles may become normal in a few weeks. The superior cerebellar peduncles inhibit muscle tonus. Destruction of these produces a hypertonia. This did not occur in two of the author's cases.

Abnormal attitudes seldom occur in man after cerebellar lesions and when they do occur they can be attributed to labyrinthine involvements. Abnormal attitudes of the extremities may occur from lack of muscular tone permitting gravity to act on the limbs. There may be associated movements of the normal limbs.

The cutaneous or superficial reflexes were unchanged in the author's case. The planter reflex remained normal. The knee jerks may be diminished and lack the forcible decisive character of the normal jerk. The affected limb swings like a pendulum. The same phenomenon occurs in tabes. An oscillatory tremor develops in the affected side. The rebound phenomenon is also exaggerated.

H. JOACHIM.

PRICE, G. E.: **Epidemic Encephalitis: Observations in Seventy-eight Cases, with Special Reference to End Results.** *The American Journal of the Medical Sciences*, June, 1922, clxiii, No. 6, No. 603, p. 871.

The author reports cases seen during the epidemic of 1919-1920 and subsequent period. Approximately one-fourth of the cases seen terminated fatally. Of the remaining three-fourths, approximately 61 per cent were left with persistent or permanent sequelæ. Relapses were of frequent occurrence, bore no definite relation to the severity of the initial symptoms and could occur several months after apparent recovery. Prognosis could not be determined from the character and intensity of the initial symptoms. A patient with mild symptoms at the onset could have a fatal relapse and sometimes those with severe and massive initial symptoms recovered. Nasopharyngeal symptoms are not infrequent at the onset but bear no direct relation to true influenza. Age bears a definite relation to mortality. Children and young adults stand the infection much better than those of middle life or old age. Change in abdominal re-



flexes is an important symptom. Epileptiform attacks may occur as a sole manifestation of the infection. Rest, quiet, and care in preventing too early activity of the patient are essential in the treatment of epidemic encephalitis.

A. T. MAYS.

WILSON, G.: **Brachial Monoplegia Due to Thrombosis of the Subclavian Vein.** *The American Journal of the Medical Sciences*, June, 1922, clxiii, No. 6, No. 603, p. 899.

Phlebitis involving the large veins draining the upper extremity is rare. Two cases are reported. The first a negro of twenty-five suddenly developed a swelling and paralysis of his right upper extremity, following a nap on a pile of warm coal ashes. At autopsy about two months later a miliary tuberculosis was found. There was caseation of the mediastinal, cervical, and retroperitoneal lymph nodes. The subclavian vein was not dissected out. The second case was also a negro, of twenty-two. He awoke one morning and found he was lying on his left arm. His entire left extremity was paralyzed and intensely swollen. The etiologic factor was syphilis. The diagnosis was brachial palsy due to thrombosis of the subclavian vein.

A. T. MAYS.

DUNN, A. D.: **Pachymeningitis Hemorrhagica Interna: A Study of Five Cases of Non-traumatic Hemorrhagic Spinal Fluid.** *The American Journal of the Medical Sciences*, June, 1922, clxiii, No. 6, No. 603, p. 819.

This condition is rarely diagnosed. In the cases reported headache was always reported at the beginning; described as sudden, terrific, or terrible; located in the occipital and basal regions and in the neck. Immediate relief was afforded by lumbar puncture. Rigidity of the neck was a constant symptom, associated with spinal nerve-root irritation. Lumbar puncture furnishes the most important sign—a bloody spinal fluid. Repeated puncture has proved a measure of therapeutic value. One of the five cases was syphilitic.

A. T. MAYS.

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# INTERNATIONAL MEDICAL DIGEST

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## SECTION ON GENERAL MEDICINE

THOMPSON, W.: **Syphilitic Backache.** *The American Journal of the Medical Sciences*, July, 1922, clxiv, No. 1, No. 604, p. 109.

Syphilis of the vertebral column is a rare condition, and when present is frequently overlooked. Although it may affect any part of the spine the most frequent sites are the cervical and lumbar regions. Over one-half the reported cases affect the cervical vertebrae. Trauma probably explains the high percentage of cervical cases. Pharyngeal ulcers and gummata are frequent associations. Pain, described as a general soreness of the back is usually the chief symptom. It is definitely localized, or radiates if there is involvement of the posterior nerve roots. It is greatly intensified at night. Local tenderness is marked. There is limitation of motion. Syphilitic spondylitis presents no definite clinical picture. Osteoarthritis from focal infection, tuberculosis, metastatic invasion, malignant tumors and typhoid spine must be differentiated. A spinal Wassermann is best. A therapeutic test can be tried.

A. T. MAYS.

STIVELMAN, B. P., AND MILLER, N. C.: **Comparative Prognosis in Tuberculous Lesions of the Right and Left Lung. A Study of 1048 Cases.** *The American Journal of the Medical Sciences*, July, 1922, clxiv, No. 1, No. 604, p. 82.

In early tuberculosis the right lung is affected twice as often as the left. As the disease progresses there is a marked increase in the number of involvements of the left lung, so that in the advanced



stage of the disease the right and the left lungs are numerically equally involved. Patients with a predominating left lung involvement are liable to run an active course more often than those with preponderating right side lesions. In early phthisis the side of the lung involved has no definite relation to the general prognosis. In advanced phthisis the prognosis is distinctly less favorable in those with preponderating lesions of the left lung. The presence of but one interlobar fissure, moderate atelectasis and the evil effects of sinistracardia and retraction of the stomach are factors which contribute toward the greater gravity of left lung lesions as compared to the right.

A. T. MAYS.

BASS, C. C.: **Transformation of the Intestinal Flora.** *Annals of Clinical Medicine*, July, 1922, i, No. 1, p. 25.

Intestinal bacterial content may be divided into those forms found at different periods of life; such divisions, however, are not definite and constant.

The new born infant shows a sterile meconium which after a few hours is contaminated by the entrance of promiscuous bacteria through the mouth and the anus.

These persist for a few days, but after the ingestion of the mother's milk the flora of the intestines is greatly simplified with the *Bacillus bifidus* greatly predominating. The *Bacillus bifidus* persists throughout the nursing period, and to it is added in rather large proportions the *Bacillus acidophilus* which in turn persists probably to some extent throughout life, being more predominant during the time in which cow's milk is a large part of the ingested food.

In adults the stools contain large amounts of a variety of bacteria some of which are effective in producing putrefactive gases and toxins.

These gases and toxins have long been held etiologically responsible for pathological conditions.

Metchnikoff proposed the ingestion of the *Bacillus bulgaricus* with milk as a culture medium to correct this putrefactive process in the intestines and for a long time it had great vogue.

However, studies of the intestinal contents have conclusively shown that *Bacillus bulgaricus* cannot be successfully colonized in the intestinal tract of man or animals.

Recent studies by Rettger and Cheplin caused them to conclude that the presence of lactose or dextrin in proper quantities in the diet increased the number of *Bacillus acidophilus* very largely and that such increase was followed by a distinct lessening of the gas-forming, putrefactive bacteria. They found also that by increasing these sugars and giving cultures of *Bacillus acidophilus* the disappearance of putrefactive microorganisms was almost total.

Bass' conclusions agree with those of Rettger or Cheplin in that the ingestion of 300 grams or more of lactose daily increases the aciduric flora and decreases the proteolytic flora, and that the putrefactive bacteria practically disappear after the continuation of the lactose for 8 or 10 days.

By experimenting with milk cultures of *Bacillus acidophilus* in several instances the ingestion of 1000 c. c. per diem, after one week or longer pure cultures of *Bacillus acidophilus* were made from the feces.

He concludes that we have a method of transforming the intestinal flora by daily feeding of 300 grams of lactose, 1000 c. c. of a suitable culture of *Bacillus acidophilus* or a combination of both in which instance the amount of each may be reduced from the stated amounts.

He warns against the use of tablets offered by the commercial interests, inasmuch as his examinations of them have shown them to contain a markedly insufficient number of *Bacillus acidophilus*.

For research purposes Bass will send to anyone with proper laboratory facilities cultures of his strains of *Bacillus acidophilus*.

**PROSSER, W. O. H.: A Review of Eighteen Cases of Pulmonary Abscess.** *The Military Surgeon*, July, 1922, li, No. 1, p. 37.

On account of the many cases of pulmonary abscess occurring in recent medical literature having a direct bearing on diseases and operations of the upper respiratory tract the writer was prompted to relate his studies of 18 cases taken from the files of the Medical Division of the Pennsylvania Hospital which occurred during the last 12 years. The etiology was as follows: Pneumonia, 5 cases, extraction of teeth, 2, convulsions, 2, tonsillectomy, 1, tonsillectomy and adenoidectomy with postoperative pneumonia, 1, suppurative appendicitis, 1, inguinal herniorrhaphy, 1, and undetermined 5. There



are, therefore, 13 of the 18 which have a definite etiology; 6 followed operations and, of these, 4 were in the mouth and throat.

The most common factor in a series of lung abscesses at the Massachusetts General Hospital, according to Whittemore, was the precedence of an operation on the upper respiratory tract under a general anesthetic. Out of 32 cases in which the etiology was definite, 17 were due to tonsillectomies, 8 to the removal of adenoids, and 3 to the extraction of teeth, this giving a total of 21 cases, or 65 per cent due to this cause. Lord says, "In 25 out of 100 cases, or one out of every 4, the cause may be definitely traced to operation about the upper respiratory tract."

Literature records cases that have developed aspiration, pneumonia and pulmonary abscess with convulsions as the etiological factor. Carr states that aspiration pneumonia, especially of the insane, is often the cause of lung abscess.

In conclusion, the writer states that pulmonary abscess touches nearly every phase of medical activity and is of practical interest to the internist, the phthisiologist, the general surgeon, the laryngologist and the dentist. No operator can have foreknowledge as to when such an accident is to occur and therefore a familiarity with the various etiological possibilities is of value.

F. SCHROEDER.

HARDT, L. L.: **Medical Management of Peptic Ulcer.** *Annals of Clinical Medicine*, July, 1922, i, No. 1, p. 53.

Hardt attempts to show that the chronicity and symptoms of gastric ulcer are not essentially due to the corrosive action of the gastric juice and in this disagrees with Sippy whose treatment is based on the positiveness of this assumption.

The author believes that the etiology of chronic gastric ulcer is based upon bacteriologic, chemical and mechanical factors, although dietary indiscretion and nicotine contribute.

The withdrawal of tobacco in heavy users is frequently followed by marked decrease in their gastric symptoms.

At the Mayo clinic, medical rather than surgical treatment, is indicated in:

(1) Patients with short histories of ulcer who have not had the benefit of accurate medical management.

(2) Young persons whose social status is such that medical treatment is practicable.

(3) Old persons who are poor surgical risks.

(4) Patients with postoperative recurrences.

(5) All patients who wish to try an intensive medical course before surgical interference.

(6) A few young persons with uncomplicated gastric ulcers.

Patients with such complications as chronic appendicitis or gall-bladder disease are treated surgically.

In the medical cases the Sippy régime is followed.

BISHOP, L. F.: **The Infantile Heart in Adult Life.** *Boston Medical and Surgical Journal*, July 6, 1922, clxxxvii, No. 1, p. 23.

The infantile heart is met with as a recognizable condition from the tenth year of life, onward. These people have a heart characterized by a relative right predominance, by the persistence of sinus arrhythmia at all ages, by a limitation of cardiac response, by a tendency to attacks of palpitation, and also by a consciousness of the heart, which the average person does not have. They often show a blowing murmur in the pulmonic region. The pathological anatomy has not yet been worked out. The man with an infantile heart can go as far as he will, without injury, for his wind gives out and he must stop. The left side of the heart is not overdeveloped because, the pulmonary circulation failing first, the left ventricle never has had an opportunity to be increased in size. The fluoroscope usually shows besides a centrally located heart shadow, a fairly definite predominance in the region of the conus.

M. M. BANOWITCH.

MUSSEY, R. D.: **Certain General Considerations of Heart Disease Associated with Pregnancy.** *Annals of Clinical Medicine*, July, 1922, i, No. 1, p. 56.

The indication and contraindications for pregnancy (whether a woman with heart disease may safely bear children) from the viewpoint as to the cardiac condition are laid down by Mussey as follows:



(1) If the lesion is mitral—

(a) Insufficiency without impairment of function—yes.

(b) With cardiac enlargement but the pulse is regular—yes.

(c) If the pulse is fibrillating and there is marked disturbance of function—No.

(2) In aortic insufficiency—

(a) If the pulse is of the Corrigan type—No.

(b) The type of pulse plus the response to effort will be the best index.

In mitral stenosis the progressive tendency of the disease is to be considered, as well as the time of onset of the murmur after the original infection and the amount of stenosis which can be determined plus the functional capacity, before deciding yes or no.

Digitalis is urged by Mussey as being of great value, especially in auricular fibrillation. Two cubic centimeters of the tincture (Upsher-Smith) three times a day for two or three days to be repeated when the pulse exceeds 90 should be given.

FLETCHER, A. A.: **Dietetic Treatment of Chronic Arthritis and Its Relationship to the Sugar Tolerance.** *Archives of Internal Medicine*, July, 1922, xxx, p. 106.

Fletcher reports the result of a clinical experiment in which he, in addition to the study of sugar tolerance, observed the effect of a diet low in carbohydrates and total food value, as advocated by Pemberton. The inclusion of a generous supply of vitamins was also emphasized in the diet. One hundred patients with a chronic non-suppurative arthritis were studied. The sugar tolerance was found to be decreased in a large majority of these patients, but this decrease showed no relationship to the severity of the disease. The patients with a low sugar tolerance were much more frequently benefitted by a reduction in diet than these cases with a normal tolerance. While the effect of dietetic treatment was being observed no other form of treatment was utilized. If foci of infection were removed, four weeks were allowed to pass, but often these foci were untouched until after the period of observation.

The majority were given the following diet: 3 glasses of milk, 3 glasses of buttermilk,  $\frac{1}{2}$  grape-fruit, and 1 or 2 oranges a day for

one week; then the gradual addition of such foods as eggs, fish, fowl, meat, 5, 10, and 15 per cent vegetables, fruits, jellies, and junkets, and finally brown bread in small amounts. Patients who were under weight were allowed cod-liver oil and cream. This increase was made so as to provide 1500 to 2000 calories a day, within four weeks time. Those who did well were recommended to adhere to the diet. Of the 100 patients, reduction in diet alone appeared to result in the recovery of 8, and in great evident improvement in 43. Women seemed to be more benefitted by the treatment than men.

T. HOWARD.

MACCARTY, W. C., AND KEHRER, J. K. W.: **Possible Defensive Factors in Cancer of the Rectum.** (A Study of 102 Cases). *The Journal of Laboratory and Clinical Medicine*, July, 1922, vii, No. 10.

The average length of postoperative life, when the factors, lymphocytic infiltration, fibrosis, hyalinization, and differentiation, are present, is greater than when the factors are absent. The average length of postoperative life, when some of the factors are present, is 40 per cent greater than the average length of life for the 102 patients, and 146 per cent greater than when none of the factors are present.

With all four factors present in combination the average length of postoperative life is 196 per cent greater than if none of the factors are present. Lymphocytic infiltration, cellular differentiation, fibrosis, and hyalinization seem to play a part in prolonging the postoperative length of life.

C. M. ANDERSON.

NEUHOF, S.: **Some Sociological Aspects of Heart Disease.** *The Journal of Laboratory and Clinical Medicine*, July, 1922, vii, No. 10.

Rheumatism, especially the acute, articular variety, chorea and tonsillitis are the largest and most important causes of cardiac disease in youth and middle-age. The inflamed tonsil is the next most frequent etiological factor of endocarditis. Tonsils which are



palpably diseased or which become frequently infected should be properly and thoroughly removed if the general condition of the patient warrants it. The removal of healthy tonsils in the presence of heart disease is not always advisable.

In the opinion of the author the teeth are not the cause of heart disease as often as thought. However it is a possible source of infection.

The question of the amount of work is taken up and the less work these patients do the better. The work should also be graduated.

These cardiac cases should be under the care of some doctor, or placed in a cardiac clinic. These clinics should have access to x-ray plates, fluoroscopy, and electrocardiograms. Special cardiac classes should be established in the schools.

A concerted attempt among cardiac clinics has been made to standardize and simplify the classification of cardiac disease. The following has been adopted:

*Class 1.* Organic (able to carry on habitual physical activity).

*Class 2.* Organic (able to carry on diminished physical activity).

*Class 3.* Organic (unequal to any physical activity).

*Class 4.* "Possible" heart disease. (Doubtful murmurs: mainly accidental, possibly organic).

*Class 5.* Potential (predisposing history).

An excellent adjuvant to cardiacs is some form of convalescent country home. A sojourn in the country is especially advisable for those who have recently recovered from endocarditis reinfections, or who look pale, tired and undernourished. In the latter overfeeding should be attempted. To bring these patients to normal weight is perhaps one means of strengthening the entire organism against the inroads of infection. The home should not be too far from the city so that the patient can be occasionally visited by relatives, thus forestalling nostalgia. Convalescent homes are especially appropriate for those with fair exercise tolerance.

C. M. ANDERSON.

SMITH, S. C.: **Death of the Heart in Diphtheria.** *New York Medical Journal*, January 18, 1922, cxv, No. 2, p. 80.

A case of diphtheria is reported clinically and electrocardiographically, in which antitoxin treatment had been neglected for seven days, the patient being sent to the hospital an hour before death.

The sustaining effect of diphtheria antitoxin, even on a heart overwhelmed by toxins, is graphically recorded.

The heart, within twenty-six minutes, exhibited the following varieties of disordered mechanism: tachycardia; ventricular flutter; ventricular fibrillation; complete atrioventricular heart block.

Ventricular fibrillation and heart block occurred after clinical death had been pronounced by four competent observers.

As the heart approached the end of life, the ventricular impulse was silent, auricular activity alone being manifest.

Two widely separated auricular impulses registered the death of the heart.

J. ROSE.

MOON, R. S.: **Prognosis in Heart Disease.** *New York Medical Journal*, January 18, 1922, cxv, No. 2, p. 68.

We may divide cardiac affections into those which have been caused by rheumatism or chorea, on the one hand, which manifest themselves in early life, and on the other, those which are due to degenerative, arteriosclerotic conditions which do not appear till about middle age. From the point of view of prognosis it is more important to decide whether a given lesion is of rheumatic or arteriosclerotic origin than to decide which valve is affected. The prognosis is much better in the rheumatic cases where the lesion is likely to become stationary than in the arteriosclerotic cases where the lesion is progressive; in the case of young children, however, the outlook is usually serious, because so often the pericardium and myocardium, are affected.

*Mitral Disease.*—Mitral disease, mitral stenosis in particular is commonly associated with rheumatism. This lesion is more common in women than in men and for a long time may give rise to no serious symptoms. With reasonable care such hearts may carry on for a



number of years and should not be a bar to marriage and childbirth. But when the heart has begun to fail in these cases, compensation is not easily restored as in the case of mitral regurgitation; the narrowing of the mitral orifice causes an imperfect filling of the left ventricle, consequently the heart obtains an insufficient supply of blood so that cardiac weakness is in consequence promoted.

Mitral stenosis, when established in late childhood, has a more serious prognosis than if it first occurs in adult life; this is due to the fact that the stenosed orifice does not increase in size while the growth of the heart continues. In such cases the patient seldom reaches the age of forty. An unfavorable feature is the development of catarrh of the bronchi.

In cases of mitral stenosis, auricular fibrillation is most likely to supervene and here the prognosis is serious, because fibrillation indicates myocardial changes.

The main danger of mitral regurgitation in early life is the susceptibility to further attacks of rheumatism, but with the lapse of years this susceptibility becomes less. The most satisfactory thing about mitral regurgitation is its amenability to treatment. The heart may break down temporarily with dropsy and all the signs of backward pressure, and by judicious treatment the patient may be restored to health.

When mitral disease is of arteriosclerotic origin, the prognosis is more serious.

*Aortic Disease.*—Aortic disease of the rheumatic patient, apart from the risk of later attacks of rheumatism may be more or less stationary and there is a static lesion which carries with it a most favorable prognosis not only with regard to length of days, but from the point of view of the amount of work. This is the cardiac lesion in which the capacity for work is greatest.

In the arteriosclerotic forms of aortic disease, the lesion is progressive, though with careful treatment it may remain stationary for a time. Changes in the coronary arteries give rise to the most serious symptoms connected with aortic disease, namely, angina pectoris, which is serious not only on account of the severe pain and alarming condition of the patient, but because it indicates considerable degeneration of the cardiac muscle and the likelihood of sudden death. In the arterial forms of aortic disease which are of syphilitic origin one should give a guarded prognosis, for though the symptoms in

these cases can be more readily alleviated by iodid of potassium than in other forms of the disease, there is a special liability to sudden death, due to the fact that the myocardium also has been damaged by the syphilitic poison; there is also the likelihood of an aortic aneurysm developing.

The more collapsing the pulse the greater the regurgitation. Changes in the character of the murmur are not of much importance, alterations in the cardiac dulness are more valuable, an increase in the transverse area of dulness being usually a bad sign, whereas the increase vertically may be a good one. When the second sound in the aortic area and over the carotids is entirely obliterated by the diastolic murmur, it indicates that the amount of regurgitation is considerable, and to that extent the prognosis bad.

*Myocarditis.*—The heart muscle may be seriously damaged without any very obvious physical signs and we have to rely very much on the history and the symptoms.

J. ROSE.

KATZ, J.: **Early Diagnosis of Cancer of the Stomach.** *New York Medical Journal*, February 1, 1922, cxv, No. 3, p. 155.

While there is not any one definite, specific sign, symptom or other means whereby we can make a positive early diagnosis in an early gastric malignancy, yet considering a number of these findings in a group will help us to diagnose an early gastric cancer in a majority of cases.

The following are of importance to be noted: (1) Age, 40 or above; (2) sudden onset; (3) history of chronic gastric ulcer; (4) anorexia; (5) loss of weight; (6) loss of strength; (7) anemia; (8) cachexia; (9) palpable tumor, when present, most important; (10) pain in gastric region; (11) vomiting and character of vomitus; (12) gastric contents examined at different times for free hydrochloric acid, combined acids, lactic acid, ferments and enzymes, Boas-Oppler bacilli, blood, soluble proteins, and sometimes there is found carcinomatous tissue in advanced cases; (13) fecal examination; (14) blood examinations for anemia; isohemolysins, sugar, Abderhalden reaction, and complement fixation; (15) x-ray; and (16) laparotomy.

J. ROSE.



GOLDSTEIN, I. H.: **Tumors of the Heart.** *New York Medical Journal*, February 1, 1922, cxv, No. 3, p. 161.

Tumors of the heart are not common. Primary tumors of the heart are rare. There are about 150 cases on record in the literature. Primary sarcoma of the heart is very rare, 40 cases being recorded. Myxomata, rhabdomyomata, and fibromata of the heart are met with occasionally.

The correct diagnosis of cardiac tumor has never been made clinically. Electrocardiographic, fluoroscopic and x-ray examinations may be valuable aids in making such a diagnosis.

J. ROSE.

KOHN, W. L.: **Blood in the Digestive Tract.** *New York Medical Journal*, March 1, 1922, cxv, No. 5, p. 278.

Bleeding anywhere in the body implies a breach in the continuity of tissue, and since many gastro-intestinal affections are characterized by a breach in tissue one should look for blood in the alimentary tract.

The use of the smaller tubes will reduce the probability of trauma to a minimum. Bleeding from the respiratory tract, teeth, gums, etc., or from hemorrhoids, rectal growths or anal fissures can be accounted for and often is ruled out. Those conditions which do not give evidence of the presence of blood in either the gastric contents, duodenal contents, or stool are generally functional in origin or nature; the absence of blood in the stool alone does not exclude the possibility of small hemorrhage above as in the stomach and duodenum.

Very small amounts of blood may accumulate in the fasting stomach as a result of a breach in the gastric lining, yet will not accumulate in the short hour following the administration of a test breakfast, hence no positive blood reaction will be obtained in the test breakfast contents. When bleeding can be ascribed to certain portions of the tract, the fact of the existence of organic disease is established, and that such a breach in continuity may indicate ulcer, erosions, papillomatous growth, chronic inflammation, passive con-

gestion, or malignancy in the mucosa, corresponding either to the area of the stomach or bowel from which it has been obtained, or to a point in adjacent organs connected with the bowel tract, such as the liver, pancreas, gall ducts or gall-bladder.

J. ROSE.

WARTHIN, A. S.: **Syphilis of the Medium and Smaller Arteries.** *New York Medical Journal*, January 18, 1922, cxv, No. 2, p. 73.

Simple arteriosclerosis (hyalin thickening of the intima) of the medium and smaller arteries is more common in syphilitics than in nonsyphilitics. It is probably not due to the localization of spirochetes in the intima, but is of secondary origin (toxic or mechanical). Syphilitic periarteritis, panarteritis and arteritis obliterans of the smaller arteries occur in all cases of chronic and latent syphilis, in greater or less degree. Syphilitic mesaortitis is essentially a disease of the arterial vasa vasorum. Syphilitic lesions of the smaller arteries are always associated with localization of the infection in any organ or tissue. The lesions are rarely gummatous in character.

Syphilitic mesarteritis occurs in the carotids, subclavians, iliaes, femorals, tibial and pulmonary arteries. It is usually of slight degree, and is found only on microscopical examination. Occasionally it expresses itself clinically as aneurysm of these arteries or in circulatory disturbances due to obstruction of the arterial lumen. Syphilitic obliteration of the pulmonary arteries may lead to the production of Ayerza's disease (chronic cyanosis, polycythemia and splenomegaly). Clinical syphilis of the peripheral arteries of the extremities is more common in the legs and feet, manifesting itself in gangrene, perforating ulcer, sclerosing atrophy, or symmetrical gangrene simulating Raynaud's disease. Little is known of the occurrence of syphilitic lesions in the arteries of the arms.

Syphilitic arteries may be a cause of peptic ulcer, or pemphigus, localized ulcers, atrophy and various forms of dystrophy due to disturbed circulation, as the result of partial or complete obstruction of the lumen of the affected artery. Syphilis of the smaller arteries and arterioles plays a very important part in paresis, tabes and cerebrospinal syphilis, and in the production of localized degenerations of brain and cord. Syphilis of the coronary arteries is also of clinical importance.



In general, it may be stated that localized syphilis of the small arterioles is an essential part of the general pathology of chronic or latent syphilis.

J. ROSE.

KIRKENDALL, C. F.: **Bacterial Vaccine Therapy.** *New York Medical Journal*, January 4, 1922, cxv, No. 1, p. 32.

The subject is presented from a practical clinical application rather than from the laboratory or theoretical viewpoint, dealing especially with pneumonia, typhoid fever, erysipelas, etc.

Lobar and lobular pneumonia, which include the mixed infection, and staphylococcus, the hemolytic streptococcus, the Friedlander bacillus, as well as all pneumonia organisms, indicate mixed vaccines. There is no time or facilities very often for laboratory findings, and a clinical diagnosis must be one's guide. Time is important and delay is dangerous, as the patient may show a change in a few hours from a pure single culture to a mixed infection. Then give a mixed vaccine.

The mortality decreases to an average of not over one fourth of former records.

A large number of patients with laryngeal diphtheria who had been given large doses of diphtheria antitoxin, one as much as 90,000 units, and a number of intubated patients, all of which were rapidly losing ground and gave no hope of response, were saved when mixed streptococcic vaccine was added to the treatment.

Bacterial vaccines are valuable in all infected conditions of the teeth and gums.

J. ROSE.

GEYSER, A. C.: **Rheumatism and Allied Affections.** *New York Medical Journal*, December 21, 1921, cxiv, No. 12, p. 707.

The treatment of rheumatism resolves itself into finding and removing the focal infection.

Neutralizing the toxins and oxidizing useless waste material are accomplished by the intravenous administration of sodium iodid.

and sodium salicylate. These injections may be repeated from three a day, or as many during the week as conditions warrant. In cases with low hemoglobin, iron cacodylate intravenously is indicated.

Elimination is brought about by a reduced intake, by omitting all diets rich in proteins and nitrogen; by daily evacuations and by copious perspiration.

The affected tissues are fed by an increase in the local circulation, best accomplished by the application of diathermia.

J. ROSE.

CHAUFFARD, A.: **The Human Syndrome of Gout.** *British Medical Journal*, May 13, 1922, No. 3202, p. 745.

It was Garrod who first defined the humoral side in gout, and recognized and proved its essential character, excess of uric acid in the serum. The modern researches with improved methods of blood-chemistry have verified these early findings of Garrod, and the average uric acid figure for 28 cases of gout was 0.094 gram per 100 c. c. of blood. The blood of 26 of the same cases showed an average cholesterol figure of 2.25 was obtained on the blood serum. For the endogenous uric acid there are two sources, disturbance of nitrogen metabolism and renal retention. We know from clinical experience how often the kidney is damaged in the gouty, and this hyperuricemia is perhaps the most sensitive test of commencing renal hyperpermeability. Probably side by side with this ought to be considered tissue retention, the gouty depositing uric acid in the tissues in excess, and then being able to liberate it and return it to the circulation, under the influence of causes producing acute attacks. With regard to exogenous uric acid, a large share of the causation of gout is attributable to errors of diet, to food in excess, to protein in constitution, too rich in spices, and to alcoholic beverages, notably burgundy and champagne.

The rôle of the liver in hyperuricemia is an important one, and in experiments with dogs fed on varying diets, and then comparing the uric acid content of blood from the portal veins, and the hepatic, during digestion and various dietetic regimes. In eight of nine dogs the uric acid content was less in the hepatic blood than in the portal, while it was the same in 3 cases of starvation, where the dogs



were given all of the water they wanted to drink. The two highest figures of retention occurred in animals fed exclusively on liver and spleen, a diet very rich in uric acid. A milk diet gave the same figures as a dog on starvation. It appears permissible to state, in spite of the fact that direct proof cannot be given, that in the hyper-uricemia of the gouty the arresting function of the liver may prove insufficient, being incapable of retaining uric acid brought from the alimentary canal, and we might find in this the physiological explanation of the capital importance of diet in the gouty. What becomes of the uric acid stored up in the tissues, and what is its ultimate fate? A part is eliminated in the urine. Another part, by a process of vicarious elimination, is deposited in the diseased joints as sodium urate, in the tophi, in the urate incrustations of slow atrophic nephritis, and these local deposits once formed are not capable of being removed. In the blood the uric acid is more accessible to our therapeutic resources, and in chronic gout there is a uric acid infiltration of the tissues which is capable of modification, particularly by spa treatment. It is difficult to discover in what form the uric acid circulates in the blood, but it is probable that it is in the form of a colloidal solution as sodium urate. In addition to a hyper-uricemia, there is in gout also a hyper-cholesterinemia and a hyper-bilirubinemia, which seem to be further evidence of the capital rôle which the liver plays. Cholesterin is present in the gouty tophi, as might have been suspected from purely clinical examination, for the pulp of a tophus is yellowish like pale fresh butter. It is absent in the joint deposits however. Acute gout has come to be looked upon as a disturbance of the colloidal equilibrium very similar to anaphylactic reactions. The excess of uric acid in the blood places the individual in a state of unstable humoral equilibrium, which may at any time be imperilled or destroyed under the influence of divers disturbing causes, errors of diet, traumatism of joints, by fatigue or an ill-fitting boot, dampness and cold, and the seasonal changes to which the gouty are so sensitive. If this explanation of an attack of gout be accepted, we are led to consider the uric acid present in excess, in the serum of the gouty as a potential exciting cause, capable under the action of a provocative agent of determining a local and elective shock, with urate flocculation.

L. C. JOHNSON.

HARPER, P.: **Progress Report on the Treatment of Leprosy by the Intravenous Injection of Chaulmoogra Oil.** *Journal of Tropical Medicine*, 1922, xxv, 4.

At Makagai Asylum (Fiji) over 200 cases are undergoing treatment by intravenous injection of chaulmoogra oil. These include a child of 4 years of age and an European aged 70 years. Since the treatment was started over 26,000 injections of chaulmoogra oil have been given intravenously. No serious ill-effects have occurred, but there have been two subcutaneous abscesses (due to faulty injection) which rapidly yielded to ordinary treatment.

Patients vary considerably in the dose tolerated, and therefore the dose must be carefully adjusted to each patient. The temperature chart alone is no guide to dosage. Patients are seldom very ill with "treatment reaction" nor as a rule do their nodules ulcerate, though such may sometimes occur. Quinin and digitalis are of very great assistance in controlling the reaction.

Thirty-eight cases have now been under treatment for periods of up to eleven months. Of the 38 cases tabulated, 28 have improved (over 70 per cent), 1 died of influenza, 3 have definitely become worse, and in 6 no change is noticeable. The 3 patients who grew worse would probably have been so affected by any other method. Many of the cases would improve under treatment by other modern methods, but the author believes this treatment to be safe, more effective and less painful.

RUBEN, M. A.: **Multiple Primary Carcinomata of the Pylorus and the Ectopic Gall-Bladder.** *Surgery, Gynecology and Obstetrics*, 1922, xxxiv, p. 201.

The following case is reported, not only because of its unique character, but because the location of the tumors lends support to the theory that mechanical lesions cause the development of malignant growth.

*Case.*—Woman, aged 67, with no special history of stomach trouble until four weeks previous—since then she has had light pains in the right side of the abdomen, coming on spontaneously or induced by coughing. She vomited a few times, but had no pain, was



never jaundiced. Examination showed patient thin but not cachectic, temperature  $38.3^{\circ}\text{C}$ . ( $100.94^{\circ}\text{F}$ .); lungs, heart, kidneys, normal; a tumor the size of the fist to the right and below the umbilicus, moved on respiration and by palpation to either side, but not easily downward; surface seemed smooth, with no adhesions or other signs of inflammation. Liver and spleen not palpable. Everything else apparently normal. Test-breakfast was well digested; free HCl 7, total acidity 24; feces positive for blood on free tests; x-ray seven and half hours after barium meal showed most of meal in ileum, small amount in cecum. A dense shadow was found in the place of the tumor, and seemed closely attached to the bowel. Operation showed two tumors, one just above the pyloric vein on the inner side of the stomach with a crater, which would admit the end of the finger. This tumor was closely connected by another in about the place of the gall-bladder, which had a smooth surface and fluctuated on palpation, with some hard hazel-nut size particles, possibly stones. In the place of the gall-bladder, there was a peritoneal duplication, a few centimeters high, which connected with the tumor,—a real mesocyst. There was an enlarged gland on the lesser curvature. He ligated the gastric vessel and resected the duodenum in two stages; then ligated the mesocyst and cystic duct, and resected about 2 decimeters of the transverse colon, making a side to side anastomosis. Stomach was closed with two continuous rows of sutures, and a Braun entero-anastomosis performed. Patient stood the operation well, and was without symptoms for the first five days, then developed peritonitis and died.

*Pathological Examination.*—Showed tumor, including stomach and colon, and an ovoid tumor connected with them. In the upper part of this tumor there was a duct about 3 centimeters in length, containing some yellow stones. Examination of the greater curvature of the stomach showed typical medullary carcinoma; tissue from the gall-bladder tumor was that of a papillomatous carcinoma, with cylindrical cells near the outlet, but irregular shaped one from the outside. Tumors were quite different macroscopically and microscopically, one chiefly papillomatous, the other adenomatous, being two distinct primary carcinomata.

The author believes that some mechanical injury caused the malignant growth; the gall-bladder being abnormally movable, in this case, caused a stretching and constant irritation of this organ.

MCKENZIE, D.: **The Influence of Oral Sepsis on the Course of Cancer of the Throat.** *Journal of Laryngology and Otology*, May, 1922, xxxvii, 230.

The author refers to cancerous ulcers of the pharynx and esophagus.

"Diathermy, even in advanced and ineradicable cancers of the throat, leads to a temporary amelioration in appearance of the ulcer. After the sloughs separate there follows a period of quiescence during which surface of growth is pale and indolent in appearance, while pain and difficulty in swallowing become considerably easier. This quiet interval does not last more than a few weeks at most. Sooner or later, and often quite suddenly, signs of inflammation reappear and growth begins to show rapid advances.

"Obviously, what takes place is that application of the diathermy sterilizes the growth area and renders it for a time aseptic; then the vulnerable cancerous tissue becomes infected again.

"Something similar may be observed when our cases of throat cancer are treated with the regular intravenous injection of copper alanin. As long as injections are continued, surface of growth manifests a dulness of hue such as we associate with the less virulent types of the disease." But events prove that the growth is uninfluenced by action of the drug.

The author has considered that in a small group of cases of untreated throat cancer, the progress of the disease is curiously slow. The history reveals the fact that symptoms have existed for many months before it is seen by a physician. One case, a post-cricoid carcinoma, was known to have existed for about 7 years. The author found all these cases were found in people who were edentulous, and had been before symptoms of cancer appeared; while on the other hand, in the septic cases, teeth were still present. "It does not seem to matter whether there be few or many teeth. I have had one case with only one tooth, in which the cancer ran a very rapid course. My suggestion is, that when all the teeth have been removed the mouth secretions are much less virulently infective than when teeth are present, and that the progress of the cancerous growth is rendered slow or rapid in consequence of this very simple circumstance. That septic infection has a powerful influence in stimulating cancerous growths is well known.



"There is another point which favors my suggestion. That is most cases do not die of throat cancer, or of hemorrhage, nor in these days of asphyxia or starvation, but of septicemia. The cervical glands enlarge rapidly and break down, while patient succumbs with all signs of severe intoxication."

SATTA, F.: **Fracture of Head of Femur** (Sulle fratture della testa femorale). *La Chirurgia degli organi di movimento*, 1922, vi, 97.

Dupuytren states that fracture of the head of the femur is often associated with luxation. In 1869, Birkett observed a posterior or displacement from indirect traumatism. The posterior superior part of the head of the femur was lodged in the round ligament. The other was displaced into the iliac fossa. In 1885, Riedel observed a posterior iliac displacement of long standing. Arthrotomia showed a longitudinal fracture of the head of the femur and of the neck. There was a secondary fracture at the inferior and internal surface. The first fragment had gone beyond the round ligament after breaking off. After three months complete ankylosis set in. Braun could easily reduce an ischiatic displacement of the femur. Aside from luxation, there was a fracture in the head of the femur; part of it extended beyond the round ligament. Robert published three cases of cervical fracture of the femur. One was accompanied by dislocation, and one by displacement of the head. Moravek from direct traumatism, observed pain extending along the psoas, the abdomen, and the ribs. The movements of the joints were permanently impaired. X-ray showed isolation of the external margin of the femoral head.

The author's patient, 36 years old, could not give any history of traumatism. He had run a motoreycle. Luxation of the femur of the right side was diagnosed. Reduction was attempted under anesthesia without success. Likewise, the same the next day. The limb was slightly rotated outward, no skin lesions, pain on pressure in the coxfemoral region. No active movements; passive movements caused severe pain. Internal rotation impaired. The x-ray showed posterior iliac displacement of the head of the femur, and fracture.

Ether narcosis. Hueter-Schede incision. The internal surface of the femoral head was found in the acetabulum. The capsule was

lacerated, peri-articular hemorrhagic infiltration. The rest of the head is displaced; the fracture showed regular borders. With energetic traction, according to Schede, the head was reduced. It was impossible to keep the bone in place. The fragment of the head was removed and shaped into a smaller head. This was put into position and a layer suture applied. The articulation became rigid after four or five weeks.

GOLDSMITH, A. A.: **Interpretation of Gastric Symptoms.** *Illinois Medical Journal*, June, 1922, xli, No. 6, p. 441.

In this paper the author emphasizes the fact that symptoms referred to the epigastric region, with the exception of gastric ulcer, carcinoma and occasionally lues, are usually due to extra-gastric causes. He does not believe chronic gastritis to be a common disease, and so differs with Rehfuss and Gigon, but thinks that the pathology seen at autopsy in this condition is the result of postmortem decomposition.

He mentions the following conditions as causes of reflex dyspepsia; (1) Cholecystitis, (2) intestinal kinks, (3) chronic ileo-cecal inflammation, (4) cecal and colonic elongation, (5) diseases of the female pelvis, (6) mobility of the kidney, and (7) diseases of the central nervous system and chest.

In none of the writer's cases was there a history of acute attacks in the causation of reflex dyspepsia, most cases simply having flatulence and constipation. Acidity may be high, low or absent.

Gall-stones, the author believes, are not entirely latent, although there may be no pain referable to the gall-bladder.

He emphasizes the point that pains in the transverse colon usually occur in the early morning before breakfast and that the pain in duodenal ulcer is due to pylorospasm.

G. H. LORDI.

HALE, WHITE, AND WILLIAM: **Bacillus Coli Infection of the Urine.** *British Lancet*, June 24, 1922, ccii, No. 5156, p. 1237.

The author discusses the possibility of direct ascending infection from the urethra and bladder to the pelvis of the kidney. He dis-



misses this as unlikely. The lymphatic route is discussed by Kenneth Walker in which the periureteral lymphatics communicate with those of the colon and appendix is then considered. The appendicular lymphatics may be the cause of the preponderance of a right-sided pyelitis. Most authors believe the infection to be hematogenous although positive colon blood cultures are rarely obtained.

Fifty-six patients were examined to test the presence of a colon bacilluria. The specimens were obtained under aseptic precautions and were found sterile. Pregnant women on the other hand are prone to colon bacillurias particularly in the fifth and sixth months.

The symptoms are as follows: Pain in the renal region often mistaken for lumbago. It may resemble renal calculus. The kidney may be enlarged and tender and the over-lying abdominal muscles may be rigid. There may be frequent painful micturition. The attack may resemble an acute appendicitis. The urine may contain albumin, pus and blood and may have a fishy odor. There may be septic temperature with chills. In children the picture may resemble a meningitis.

The author has never seen a fatal case. In pregnancy there was no premature delivery. The differential diagnosis includes perirenal abscess, cystitis, lumbago, renal calculus, gall-stones, tuberculosis, malignant endocarditis, meningitis.

Treatment includes hyoseyamus, urotropine and sodium phosphate and colon vaccine. The disease has a tendency to recur and relapses are not infrequent.

H. JOACHIM.

STENSTROM, T.: **Diabetes Insipidus, Its Pathogenesis and Therapeutics.** *Endocrinology*, May, 1922, iv, No. 3, p. 365.

Study of the reports of cases of diabetes insipidus has shown that in every case the increased supply of protein in the diet has brought about an accelerated elimination of sodium chlorid. If a patient of genuine diabetes insipidus has at his disposal considerable reserves of sodium chlorid in the organism, an increased supply of protein causes an accelerated elimination of salt. But if he has been previously deprived of these reserves, no increased quantity of NaCl will be excreted. The effects of pituitrin on a patient with diabetes

insipidus examined by the author were as follows: the diuresis always presents a diminution, and the molecular concentration in the urine shows a rise parallel with this, and approximately proportional to the diminution in urine. The total amounts of NaCl and nitrogen are, on the whole eliminated in smaller quantities, even though there be an increased per cent of excretion. The principle of treating diabetes insipidus has been to limit sodium chlorid and protein because it is assumed that secretory power for NaCl and N is limited. Critical examination of the literature, and personal experience fails to substantiate this in the author's mind. In the diabetic treatment, only the sodium chlorid need ordinarily be reduced. In certain cases it appears that permanent improvement has been attained by the administration of pituitrin. Principally on theoretical grounds it appears unjustifiable to resort to it uncritically in every case. Pituitrin injections raise the concentration of the urine simultaneously with diminution of the quantity secreted, thereby restoring the kidneys to a partial normal state. But the concentration does not in every case rise in proportion to the diminution in quantity, resulting in a retention of NaCl. In such cases pituitrin should not be used, and before it is employed, the foregoing principle should be considered.

L. C. JOHNSON.

NORMAN, N. P., AND EGGSTEIN, A. A.: **Pyogenic Infections of the Digestive Tract and Their Biological Treatment.** *New York Medical Journal*, April 19, 1922, cxv, 449.

Clinical entities should be considered as biological phenomena and not as results of pathological changes, the latter being the manifest part of a disordered whole or the end result of the disorganized biological unit. This is particularly true of a disease, the result of an infection, because in its immune and biological reaction the infectious disease is a general disordered condition involving every constituent cell of the body to some extent, and to a specific extent special structures active in the immunological and biological reactions. The authors give credit to the discovery of the relationship of infected teeth, tonsils, and other easily diagnosed foci of infection to disease, but maintain that obscure foci, which they designate as



occult foci of infection, are just as important. The most common location of occult foci is in the gastro-intestinal tract. Clinical, pathological and bacteriological observations of the gastro-intestinal tract have convinced the authors of the value of routine examination of this region for pyogenic infections. Special methods were used in the examination of stools and particularly for obtaining the pyogenic bacteria in pure cultures. Attention is called to the failure to relieve patients of toxic symptoms even after operative procedures upon teeth, tonsils, sinuses, appendix and gall-bladder, if the gastro-intestinal tract retains the source of infection.

Intestinal stasis and constipation is the result of pyogenic infections of the alimentary tract in the majority of cases. The authors advance the idea that peritoneal adhesions, hemorrhoids, kinks, cholecystitis, pancreatitis, appendicitis, gastric ulcers and biliary cirrhosis are all localized manifestations of an infection of the gastro-intestinal tract. The vast area and large quantity of the lymphoid tissue and mucosa of the digestive tract from the mouth to the anus furnishes a fertile field for infections. Gastro-intestinal tract infections are usually associated with existing or pre-existing infections of the teeth, sinuses, tonsils or respiratory tract and the removal or resolution of these infections may or may not result in the relief of the clinical symptoms. The authors maintain that these unrelieved clinical symptoms, in such cases, are due to transfer of the infection from the upper digestive tract to the lower digestive tract and the removal of these lower digestive tract foci of infection usually suffices to remove the toxemia producing the unrelieved symptoms. These observations have led them to conclude that the removal of teeth, tonsils, gall-bladder, appendix, hemorrhoids and drainage of sinuses, in those diseased states with which they are associated, is insufficient in the majority of instances. Therefore, they have formulated a definite routine for the detection of pyogenic infections of the lower digestive tract, and by restoring an approximate normalcy of the bacterial flora of the intestinal tract, the biological environment is so changed as to become unfriendly for the propagation of the pyogenic types. A complete de-infection and de-toxication have been brought about and the results assume a permanent constitutional aspect.

After a report of several typical cases, the authors present the following classification of the intestinal toxemias:

1. Putrefactive Toxemia 

{	<ol style="list-style-type: none"><li>1. Indolic types with indican.</li><li>2. Indolic types without indican.</li><li>3. Butyric acid types with <i>bacillus</i> <i>aërogenes capsulatus</i> bacterial flora.</li></ol>
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2. Pyogenic Infection Toxemia.

The pyogenic infection types may or may not be associated with putrefactive types. The indolic types of putrefaction with indicanuria are usually associated with a patent ileocecal valve, allowing colon bacillus activities in the lower ileum on a relatively carbohydrate-free media with the production of indol in a location where it is rapidly absorbed. The type without indican is rarely associated with ileocecal valve incompetency and the putrefactive products are absorbed so slowly through the colonic mucosa as to allow thorough hepatic cleavages of the indol. The butyric acid type of putrefactive toxemia is associated with a fecal flora predominating with the vegetative and sporulating forms of *bacillus aërogenes capsulatus* and shows an excess of butyric acid in the stools.

The pyogenic infection types are especially common and are due to a direct infection by pyogenic cocci of the intestinal mucosa, lymphoid tissue and mesenteric lymph glands. The pathological manifestation consists of marked inflammatory infiltration of the intestinal mucosa and musculature with hyperplasia of the lymphoid tissues, and in many instances, ulceration and cystic degeneration of the intestinal glands, thickening of the muscular coats and peritoneal adhesions. By special technic staphylococci and various types of streptococci are isolated from drained stools of the infected patients.

Restoration of the biological function of the intestinal tract is effected in the following ways:

- (1) By efficient mechanical drainage (a special apparatus is described for this procedure).
- (2) By proper implantations of protective bacteria.
- (3) Dietary maintenance of a normal bacterial flora.
- (4) Autogenous vaccines in selected cases.
- (5) Exercises and postures.

The authors substantiate the observations of Cheplin and Rettger and Hull that the most complex fecal flora can be simplified in from three to seven days. They believe that intestinal colonization must follow natural lines and have discarded the use of bulgarian bacilli,



a milk parasite, unacclimatable to the intestinal tract, and use acidophil types. Colon bacilli implantations are rarely necessary as these bacteria are, with few exceptions, always found in a drained stool specimen. The colon bacilli flourish with acidophil types and the lactose content of the diet finds its way into the lower ileum and colon, and in this way the colon bacillus is converted from an indol former into a fermentative organism. Laxatives are not used. Antiseptic solutions have been discarded because of their harmful effect upon mucus membrane and an isotonic salt or soda bicarbonate solution is used.

The evolution of a method is briefly described. The authors believe gall-bladder diseases, appendicitis, hemorrhoids, peritoneal adhesions and constipation to be preventable in many instances by careful supervision of the teeth, tonsils, sinuses and respiratory tract. They believe foci of infection, obvious or occult, or both, to be operative either acutely, sub-acutely, chronically or exacerbatorily, in many of the chronic diseases including arteriosclerosis, chronic nephritis, myocardial diseases and rheumatism. A complete opportunity for recovery is not given a patient unless there is a de-infection and detoxication of the digestive tract. This also holds true for postoperative convalescence from gastric or duodenal ulcers, gall-bladder diseases, appendicitis, hemorrhoids, diseased tonsils, sinus infections, rectal fistula and mal-convalescent states following the acute infections as pneumonia, influenza, the exanthemata, etc., and obscure metabolic syndromes.

WETTERER, J.: **Cancer Therapy** (Neue Gedanken zur Therapie des Karzinoms). *Deutsche Medizinische Wochenschrift*, April, 1922, xlviii, 480.

The author had previously proposed to give generalized treatment beside the local combatting of the cancerous focus by roentgenray. During the latter stages of the disease it is generalized, and circulating in the blood or has caused a blood degeneration. He concluded that the patient who had been freed from cancer either by operation or by roentgen therapy would contain in his blood, anticancerous constituents. He is of the opinion that, if this blood was taken and injected into the circulation of other cancerous patients, some help

might be derived in combatting the disease. Probably the blood of patients not having been relieved of their cancer will contain some anticancerous agents. He could not prevail upon the patients who were clinically freed of cancer, to act as donors, and therefore had to delay investigations. Furthermore it seems possible, that the blood of the young individual, who generally does not suffer from the disease, would contain the defensive bodies in a high degree.

The children and grand-children of cancer patients were preferred as donors. The first to be treated were two hopeless cases, with beginning cachexia. The first was a woman 68 years old with deep cancer of the temporal region. She was very weak. Roentgen radiation had been without results. Irritation doses were given upon clean thymus and the smooth bones, and serum was injected from a grand-child, 14 years old, and repeated first three, and then two, and one week later. Three days after the first injection the erythrocytes increased from  $\frac{1}{4}$  million, to about 4 million; the hemoglobin contents also increased. The carcinoma which had been open and secreting very much, dried off in large areas. The patient gained weight.

Another patient, male, was 66 years old, suffering from carcinoma of the stomach, and much emaciated. The blood of his daughter, 21 years old, was used while roentgen treatment was given. The erythrocytes increased, the patient could sleep, soon after the first injection, and gained weight. Four injections were made. Shortly after that the tumor which had protruded from the gastric region, could no longer be palpated. The increase in weight amounted to 5 kilograms.

Only the serum was injected, for the blood corpuscles were considered additional work for the system. The exact doses of serum have not yet been fixed. The intention is to make these injections before operation, or roentgen treatment.

**GORDON, A.:** Syndrome of the Long Fibers of the Crossed Pyramidal Tract. *Archives of Diagnosis*, January, 1922, xiv, 140.

Two cases are reported. The first in a man of 60 years was a case of paraplegia of three and a half years' duration in which are evidence of motor tract involvement but without spasticity in the



affected limbs. The lesion apparently does not extend to other portions of the white matter. Contrary to what is found in the few published cases of the classical primary lateral sclerosis the paraplegia is not spastic. Anemia was absent as repeated blood examinations were invariably negative. Syphilis was excluded, as the personal and family antecedents were negative in that respect and a Wassermann test of the blood and spinal fluid gave equally negative results. The second case is one of over three years duration in a man 56 years of age with a unilateral paretic condition commencing to involve also the opposite leg and one upper extremity. Like in the first case the state of reflexes indicate a motor tract involvement, insidious in onset, gradually progressing, but at no time was there any degree of spasticity in the affected limbs. Contrary to the first case, the disorder commenced here with spasmodic contractions in the muscles of the limbs which were to be involved. In both cases there was total absence of sensory disturbances or of abnormal sphincter manifestations. The disorder was exclusively motor from the very beginning and during a period of three and a half years. The blood examination shows no evidence of anemia, there are no abnormal red cells. The Wassermann test of the blood and spinal fluid is negative. There is no history of miscarriages and the patient shows no evidence of old luetic infection. The syndrome of the long fiber of the spinal cord is due to a subacute degeneration. The two cases here described are examples of the syndrome of the long fibers solely of the lateral motor tract.

HARTMAN, F. W.: *Synovial Membrane Tumors of Joints. Surgery, Gynecology and Obstetrics*, 1922, xxxiv, 161.

The author divides joint growths into pedunculated tumors, diffuse tumors with giant cells, and those with no giant cells.

CASE L.—Man, aged 46, with impaired knee for the previous six months; showed mass size of the patella on the inner aspect of the knee. *Operation*: excision, restored function fully. *Pathological examination* showed soft and elastic tumor mass, composed of spindle and irregular-shaped, pigmented cells, with oval nuclei, large giant cells, and occasionally fatty cells; quite vascular. *Diagnosis*: hypertrophied, sarcomatous, synovial fringe.

CASE II.—Female, aged 23, with painful right knee, which has existed for 8 months. Operation disclosed a small pedunculated tumor, attached to the synovial membrane, the size of a bean; pedicle was ligated and tumor excised. *Diagnosis*: myeloid sarcoma. There was no recurrence after eight years.

Dowd reports a case under title of villous arthritis of the knee, as follows: Male, aged 38, swelling and disability of right knee, with partial loss of function for four years. Patellar click was present, flexion was limited and there was mass on either side of the patellæ. Operation disclosed many villi, largest measuring 2 by  $1\frac{1}{2}$  inches; the villi arose in many parts of the joints, appearing like a bunch of grapes. As many as possible were excised and joints closed. Pathological examination showed papillomatous projections attached by a fibrous band. Microscopically, the periphery was infiltrated, vascular fibrous tissue. Within were closely packed spindle cells, separated by connective tissue, with giant cells and numerous blood-vessels scattered about. Mitotic figures were present. *Diagnosis* giant cell sarcoma. Recovery was uneventful.

• The author's own case was that of a boy, aged 20, who suffered from swelled and aching pain of the knee joint, which began some four years previous. The joint had been frequently aspirated, draining away 50 c. c. of cloudy, blood-stained fluid. *Diagnosis*: villous arthritis. Operation disclosed many small, and one large palpable tumors arising from the synovial membrane; firm and elastic, reddish brown, or gray, rather granular. Entire joint capsule was thickened, and reddish brown in color. Resection was done. Pathological examination showed the synovial membrane was crowded with smaller and larger villi; cells of three types; round cell with vesicular nucleus and abundant protoplasm, filled with granules, brownish yellow; also a large oval or rectangular cell, with small blue staining nucleus, and granular protoplasm, and also occasional giant cells with multiple nuclei, and deep blue staining granular protoplasm. The second type of cell is the foaming or xanthoma cell, with protoplasm appearing as a mass of bubbles. Negative reaction with osmic acid. Sections from the smaller synovial fringes show all the cell elements, the brownish yellow pigment stains positively for iron.

Lockwood reported a tumor of the knee, which had existed for three years, upon which a resection was done. *Diagnosis*: spindle celled sarcoma.



Blumenthal reports disturbance of the knee joint in which capsular extirpation was done; microscopically, large-celled sarcoma. No recurrence in two and half years.

Lejars and Rubens-Duval report a case which had begun six years previous, from a blow in the knee. X-ray was negative, except for small erosion of the external condyle of the knee. Operation included excision of all effected tissue, and the erosion curetted. Within a month there was local recurrence of like tumor tissue. High amputation was done three months after the second operation, recurrence occurred not only in the joint but in spots in the bones. In commenting, the author states that the metastases may have been due to repeated local excision.

The duration was from four months to six years in one group; symptom of onset, pain in five, tumors in three, and interference of function in two.

*Results.*—One died of infection showing no metastasis at autopsy; four were cured by capsular extirpation, point resection, or thigh amputation.

*Treatment.*—Palliative measures and incomplete excisions are contraindicated, since they may cause the malignant characteristics shown in these cases. These neoplasms should not be termed sarcoma until clinical or pathological evidence is obtained.

BRIGGS, N.: **Treatment of Rat-bite Fever.** *British Medical Journal*, 1922, i, 185.

*Case.*—Severe inflammatory symptoms and fever commenced four days after bite, whereas the incubation period is usually said to be from five weeks to two months. Patient suffered from relapsing fever with intervals of three days. Wassermann at first was strongly positive, but became negative after disappearance of all signs and symptoms which immediately follow the injection of 0.2 gram of novarsenobillon.

When admitted to hospital, fifteen days after bite, temperature was 101° F.; arm showed general swelling with a localized brawny infiltration around a shallow ulcer. Blood film revealed no malaria parasites or spirilla. The epitrochlear gland of the right arm was enlarged and tender, but axillary glands were not affected; no rash or

urticarial lesions. Fever continued for 4 days but went no higher. On the fifth day temperature was normal, and continued normal for three days. Blood was taken for Wassermann test; scraping of ulcer found negative to organisms of streptothrix type.

On the eighth day temperature rose to 102° F., and arm showed no improvement.

Two days later 0.2 gram of novarsenobillon was injected intravenously in 10 c. c. of sterilized double distilled water. Following morning temperature was 99° F., and in the evening it was normal; there was no recurrence.

Four days later all signs of inflammation had completely disappeared, and patient was quite well.

"In the literature at my disposal I have been unable to find any record of a positive Wassermann reaction in association with rat-bite fever, but am informed that a positive reaction has been recorded twice.

"In my case, as the Wassermann reaction became negative after what was virtually a provocative dose of novarsenobillon, it appears unlikely that the positive result was due to a syphilis infection."

PETTIT, A. V.: **Treatment of the Lacerated and Infected Cervix Uteri.**  
*California State Journal of Medicine*, 1922, xx, 77.

This report was undertaken with the idea of estimating the relative value in the treatment of three types of operations. Actual cauterization; trachelorrhaphy; and amputation.

Symptoms are, as generally given, numerous and varied. There is no treatment indicated for any healed laceration of the cervix in the absence of infection. Considerable can be done in the way of prophylaxis, repair of the laceration at or near the time of its inception, before infection has taken place. The longer the interval between occurrence and repair, the greater the possibility of infection. "Edema of the tissues of the cervix certainly obscures the anatomy somewhat, but the difficulty of getting proper coaptation of the lacerated edges is by no means insurmountable. After proper approximation of lacerated edges there should be no more obstruction to drainage of lochia than in the unlacerated cases."

"Immediate repair of cervix following childbirth can be done



only in a hospital and with an assistant, but the advantage to the patient is easily worth the trouble."

"In the 100 cases of cauterization, 86 were cauterized radially, with the Paquelin cautery, under general anesthesia; at each stroke of the cautery the point being buried in the cervical glandular tissue. Fourteen cases were done without anesthesia and were more superficial. It is our custom to have the patient take a hot douche every day for about 2 weeks following cautery, less frequently after that until at the end of about 6 weeks cervix should be healed and clean."

"In the 200 cases of trachelorrhaphy and amputation, 162 had lacerations. In general, trachelorrhaphies were done on those with a relatively mild cervicitis, while those of more extensive infection or laceration were amputated. Two types of trachelorrhaphy were done, 87 Emmet type and 13 Stürmdorff. In the amputations, 51 were of the circular type and 49 the Shröder operation." The effects of cauterization, trachelorrhaphy and amputation were contrasted in the relief of leukorrhea in 225 cases. The cure of the discharge by amputation in 82 per cent is in marked contrast to the 62 per cent cure in cauterization and the 40 per cent cure in trachelorrhaphy. Cauterization shows a high percentage of cases merely improved; this is probably because of an insufficient cauterization. "In the cured or improved totals, cauterization leads, with trachelorrhaphy only 59 per cent."

A comparison of the two types of trachelorrhaphy shows the Stürmdorff operation leading the Emmet in the cure or improvement of leukorrhea, 87 per cent to 57 per cent. "The inference is plain; cure of cervical discharge lies in the removal of the infected glandular tissue to the cervix."

"The cases have been divided into two groups, those having only cervical and possibly perineal work, and those having a laparotomy in addition."

The percentage is against trachelorrhaphy, with cauterization showing 56 per cent cured or improved, amputation 80 per cent and trachelorrhaphy 60 per cent. "The explanation is not far to seek; trachelorrhaphy fails to remove the infected tissue and symptoms from cervical lesions lie mainly in the infection present."

*Conclusions.*—"In hospital obstetrical practice, in trained hands, the best prophylactic procedure against the development of infection

of the cervix is the routine exposure of the cervix in primipara, after delivery, and suture of the lacerations.

"For the cure of infection and laceration of the cervix, with the accompanying symptoms, certain types of amputations are the operations of choice.

"Trachelorrhaphy is preferable to cauterization if future pregnancy is a consideration.

"Cauterization, for the treatment of infection of the cervix, should be undertaken only if future pregnancy is no longer a consideration.

"The Stürmdorff conical enucleation of the glandular elements of the cervix possesses the virtue of high amputation; and should give the least possible interference with future pregnancies."

**BALFOUR, D. C.: The Management of Gastric and Duodenal Ulcer.**  
*Surgery, Gynecology and Obstetrics*, 1922, xxxiv, 127.

There have been great changes in the last few years in the surgical treatment of duodenal and stomach ulcers, but there are many questions still to be solved before the subject is placed on a consistently satisfactory basis. In regard to the etiology, the selective action of bacteria, shown by Rosenow, is most important. In the realm of diagnosis the close association of the well-qualified internist, x-ray man, pathologist, and surgeon is of great importance as is shown by the fact that their composite opinion is correct in 95 per cent of cases. Especially helpful is the work of the x-ray in experienced hands. Also of great value is the opinion of the well-trained clinician, who can properly evaluate the diagnostic aids, and is familiar with the results of methods of management, so as to determine the best course for the patient.

The principles of treatment of gastric and duodenal ulcer are coming to be generally agreed upon; even the surgeons recognize that there is a stage in the development of the lesion which may well be subjected to medical management alone. A number of early ulcers which heal spontaneously or under the care of the medical man are hard to determine, but it is still a greater problem to determine why some heal and others do not.

Most surgeons agree that early ulcers should have a thorough trial of cure under a medical man, if the patient can afford the time



and expense needed; then when it becomes chronic and recurrent, the best immediate results and late as well are achieved by surgery.

Surgeons are not agreed as to the best method of surgical management, but gradually the best will take its place; gastro-enterostomy really through its results justified surgical treatment. And it is being recognized that there is a great difference from the standpoint of surgery in the distinct entities of gastric and duodenal ulcer.

Further it is being recognized that the treatment of gastric ulcer is based upon its size, situation, character, and complications; an operation indicated for one ulcer may be quite ineffective for another—the trend surgically is toward more radical measures. The gastric ulcer is now often excised, if local conditions favor.

"The subsequent course of patients operated on for gastric ulcer is not so satisfactory as the course of those operated upon for duodenal ulcer. The subsequent death rate in duodenal ulcer is not higher than the death rate in the general population of similar age and sex, but the subsequent death rate following operations for gastric ulcer is three times the death rate in a corresponding group of persons in the general population. Gastric ulcer is a very much more serious malady from all standpoints than duodenal ulcer, and the fact may be emphasized that these diseases should always be considered and discussed independently."

There is a strong tendency to develop cancer after all types of operation for gastric ulcer, and secondary ulcers may follow any type of operation; also postoperative hemorrhage may follow operative procedures; these are subjects which need further study.

**SAMUT, R.: Colloidal Manganese in Hodgkin's Disease. *Lancet*, 1922, 1, 17.**

*Case 1.*—Man, aged 27, complained of increasing weakness and the appearance of two large swellings on each side of his neck, with similar swellings in the groin. Examination showed that these swellings were the lymphatic glands, which were firm and showed no tendency to softening; the spleen also was enlarged, and there was tenderness over the epigastrium with a dull, aching pain over the left hypochondrium. Blood showed reds were diminished to 3,200,000, hemoglobin 68 per cent; microscopy also showed small lymphocytes.

30 per cent. Diagnosis was Hodgkin's disease. Treatment, sodium cacodylate .1 grain injections, until 24 injections had been given. No improvement had occurred, the injections were changed to those of colloidal manganese. There was improvement after the first eight or ten injections, and it continued steadily so that after the first three months' treatment, the glands had practically disappeared; the only one left was a slightly swollen one on the left side of the neck. The patient then was taken with an acute appendicitis, which proved on operation to be a large abscess, with beginning peritonitis, causing his death in four days.

*Case 2.*—Woman, aged 22,—clinical and blood picture the same as the case previously described. She had been treated previously for several months with no improvement. Injections of colloidal manganese were started at once, and improvement was noticed after the first few injections, with a steady diminution in size of the glands; she now shows no trace of the swollen glands. Her color had improved greatly and she said her general condition was "normal".

**BERNSTEIN, M. A.: The Clinical Aspect of Tendon Transposition.**

*Surgery, Gynecology and Obstetrics, 1922, xxxiv, 84.*

The author has previously described a method of tendon transposition which was based upon animal experiments, and upon a technique developed on cadavers. It consists in transposing a healthy tendon, together with a sheath and peritendonous structures to replace a paralyzed one. In the lower portion of the peroneus longus muscle, a plastic is performed on the sheath to enclose the tendon.

From embryological specimen, and anatomical specimens, it is found that the tendon with its peritendonous structures comprises an integral unit. The sheath is looked upon as a fluid buffer to protect the tendon from external violence, and also as a medium through which the tendon can glide. Surgically, it serves a great purpose. It protects the tendon from traumatism in tendon transposition. It permits the peritendonous structures to bear the effects of accidents from infections. It preserves the blood supply and prevents the formations of adhesions directed to the tendon.

The tendon synovial development begins as a rarefaction of the embryonal tissue about the tendon. When this is complete, the



cavity is formed. The embedding tissue takes on a mucous character and gives rise to the first synovia.

The older methods, such as Micolandini's anatomical transposition, and the direct implantation method of Lange and Drobnik, did not take into account the physiological relations between tendon and peritendinous structures. Not sufficient attention was given to the conditions which influence its function. Mayer's method consists in removing the tendon from its surroundings and from the tendon sheath, and transposing it through the sheath of the paralyzed tendon transposition by the method of tendon stripping, that while they had not torn loose from their attachment, they had degenerated into insignificant bundles, which were incapable of producing any mechanical action.

End-results of complete tendon transplantation, especially in the hands and fingers, are not as satisfactory as had been hoped, so far. They were practicable but not functionally effective. The tendons became fibrous, adhesions forming between the tendons and the new surrounding tissue. Bony structural changes in the joints were not corrected. Poor tendons were used to replace paralyzed tendons. The tendon to be transposed must be strong enough to perform the work imposed. The muscle which has been involved in the acute stage of poliomyelitis is not fit for transposition. It takes very little slack in muscles to produce interference with function. The author prefers to suture a tendon under a little tension rather than to leave it too long. A taut muscle can be relieved by over-correcting the joint. Often an apparently paralyzed muscle can be made to function when a healthy muscle is jointed adjacent to its point of insertion, for instance the tibialis anticus muscle may have lost its function, but the extensor proprius muscle is active, and when transposed to the insertion of the tibialis antique, the latter is stimulated to contractility due to the contraction of the former.

The author made an operation upon a boy 9 years of age, who had a typical attack of acute poliomyelitis when he was 3 years of age. Electricity and massage had been used. The ultimate result was paralysis of his anterior leg muscles, tibialis anticus, extensor proprius hallucis, and to some extent of the extensor communis digitorum. He wore a brace to correct the resulting bulgus deformity. The brace was removed and faradic current applied. The peroneus longus was transposed together with its sheath, and inserted into the

split tibialis anticus, at its point of insertion, subperiosteally, into the base of the first metatarsal bone.

*Operation.*—Incision begins at the upper outer third of the leg over the peroneus longus, curving around and beneath the external malleolus to about the perineal tubercle on the outer side of the foot. The knife is changed and the skin edges protected. The peroneus longus is exposed and the deep fascia dissected away. The tendon is isolated at the lower end of the incision where it passes to the plantar surface and is severed. Retention sutures are introduced and the tendon lifted out of its bed. Kangaroo tendon is used. The tendon bundles must not be constricted, for that reason the author has made the herringbone stitch. (The author has found that silk causes pressure necrosis with liquefaction at the insertion. It will occur about the tenth day after operation). The tendon is now removed from its surrounding tissue by scissors, as much of the peritendonous structures as possible being taken. The roof of the canal is cut at a point where the lateral ligament of the ankle joint and fascia cruris must be respected. The tendon is delivered from this canal, and the mesotendon cut as low down and as far away from the tendon as possible. This releases it to the point where it is surrounded by its own sheath. The tendon and its sheath are isolated to beyond the musculotendonous junction. This is done to assure direct muscular pull. A plastic is performed upon the lower portion of the sheath, in the following manner: Two allis forceps are placed upon the free flap and the flap stretched out. This part of the sheath tears very easily. It is brought over so that it surrounds the tendon and is sewed by means of a fine catgut threaded in a cambric needle. Now only a small portion of the tendon remains exposed at the point for insertion. A tunnel is made by passing a large veterinary eye probe downward and inward along the course of the tibialis anticus muscle, forcing it down to the point of insertion of that tendon. The curve incision is made over the tip of the probe which corresponds to the insertion of the tibialis anticus muscle, and the tip of the probe is delivered. The two ends of the probe are moved from side to side to increase the width of the canal. The facial planes must be incised at the point of entrance of the transposed tendon, so that the tendon will not become strangulated. The probe is threaded by the kangaroo fixation suture and pulled down. The tendon is steady and prevented from twisting and brought out at the lower point of the incision, and fixed.



The tendon must not be constricted at this point by too many sutures. The skin is closed with cat-gut and a circular cast applied extending from about the knee and including the toe. In the long posterior incision, the lateral ligament which has been cut is sutured by a continuous fine kangaroo tendon. The suture around the external malleolus must be made with great care in order to disturb the integrity of the joint. The cast is retained for six weeks, then passive motion for ten days, then walking is permitted.

In every case of poliomyelitis there is some shortening of the extremity. A properly fitted shoe must be applied with an insole pad.

## SECTION ON LABORATORY AND RESEARCH

DUVAL, C. W., AND D'AUNOY, R.: **Studies Upon Experimental Measles. II. The Exanthematous, Pyrexial, and Leucocytic Syndrome Produced in the Rabbit by Intravenous Inoculation of Blood from Cases of Human Measles.** *The Journal of Experimental Medicine*, August, 1922, xxxvi, No. 2, p. 231.

By inoculating rabbits intravenously with defibrinated human blood obtained from measles cases at the stage of temperature height, the authors were able to induce in these animals a typical syndrome bearing all the essential features of that infection in man. The interval between collection of infected material and animal inoculation was never more than one hour, and during this intervening period the defibrinated blood was kept at a temperature of  $37.5^{\circ}$  C. ( $99.5^{\circ}$  F.).

Following a definite incubation period of from two to five days the animals infected showed pyrexial, leukocytic, and cutaneous alterations. Fully 90 per cent of such animals reacted in a remarkable manner. The earliest constant symptom of the infection was a rise in temperature. Concomitantly with this pyrexia there was a diminution in the total number of circulating leukocytes. Sometimes there was actual leukopenia. The most striking objective signs were coryza, conjunctival injection, enanthemata, and exanthemata. The mucous membranes showed lesions similar to the Koplik spots in man. They occurred on the buccal side of the oral cavity ranging in number from two to eight discrete hemorrhagic areas with paler centers. They appeared as a rule coincidentally with the temperature rise or shortly thereafter. The exanthematous lesions occurred in about 40 per cent of the infected animals. The rash appeared as early as the third day and as late as the seventh day after inoculation. In its



early stage it was of the macular variety; later it developed into the papular type. At the latter period, the cutaneous manifestations appeared as slightly raised, flattened, purplish red, discrete areas in the skin of the face, neck, chest, and abdomen.

Repeated passage of the virus of measles through the rabbit increased its virulence. In the animals dying as a result of the infection grave nephritic changes were evident. It is a noteworthy fact that the pneumonia so common in fatal cases of human measles was not observed in any of the experimental animals.

H. M. FEINBLATT.

DUVAL, C. W., AND D'AUNOY, R.: **Studies upon Experimental Measles. III. The Symptom-complex in the Guinea Pig and Rabbit Following the Intra-tracheal and Intravenous Injections of filtered Nasopharyngeal Secretions from Cases of Human Measles.** *The Journal of Experimental Medicine*, August, 1922, xxxvi, No. 2, p. 239.

The nasopharyngeal secretions used for these experiments were secured from cases of the human disease at the height of the cutaneous reaction. Filtration of washings was made through Berkefeld N filters, the filtrate in all instances showing no ordinary bacteria. As a result of the experiments recorded it seemed conclusively established that the intratracheal and intracirculatory introductions in guinea pigs and rabbits of these filtered secretions occasion a definite and constant reaction. Enanthem, exanthem, and pyrexial disturbances characterize this specific reaction in the rabbit; in the guinea pig the reaction manifests itself by pyrexia marked leukopenia, and grave nephritis in the fatal cases.

The regularity with which it has been possible to produce this symptom-complex in guinea pigs and rabbits following the injection of filtered nasopharyngeal washings from cases of human measles and the similarity of the symptom-complex to the manifestations of measles both in man and in the guinea pig and rabbit following the intracirculatory injection of blood from cases of human measles indicate that there is present in the nasopharyngeal secretion of measles cases as a causal agent of the disease a filter-passing virus.

H. M. FEINBLATT.

SCOTT, W. J. M.: **Influence of Glands with Internal Secretion on the Respiratory Exchange. IV. Effect of Suprarenal Insufficiency in Cats.** *The Journal of Experimental Medicine*, August, 1922, xxxvi, No. 2, p. 199.

Marine and Baumann in 1921 demonstrated a significant and sustained increase in heat production in the majority of rabbits following suprarenalectomy or freezing of the suprarenals. It appeared desirable, therefore, to ascertain whether this relationship between the suprarenal gland and basal metabolism is peculiar to some feature of organization in this species. The rabbit has relatively great normal temperature variations and it usually has accessory suprarenal masses; whereas the cat has a fairly constant temperature and accessory suprarenals are rare. This report records the changes in heat production observed in cats following varying degrees of suprarenal injury produced by partial extirpation, vessel ligation, freezing, and various combinations of these procedures. The gaseous metabolism was measured with the Haldane apparatus as modified by Marine and Lenhart. Altogether 35 experiments were conducted on 24 cats in which the respiratory exchange was followed before and after operation, as follows: freezing, 10; ligation, 17; partial removal, 6; and operative trauma, 2.

The results of these experiments may be summarized as follows: Severe and sufficient non-fatal injury to the suprarenal cortex by freezing or by ligation in cats causes a significant and prolonged increase in heat production. Lethal injuries to the suprarenals by freezing, ligation, or partial excision in cats causes a fall in heat production. Insufficient injury to the suprarenals by freezing, ligation or partial excision in cats produces no significant alteration in heat production. Further evidence of a close thyroid-suprarenal cortex interrelationship is indicated by the rapidity of thyroid hyperplasia and by the effects of KI after suprarenal crippling.

In addition to the effect on heat production there are clinical symptoms, some of which can be readily correlated with it. Increased appetite, which may or may not be associated with a gain in weight, sleekness of fur, and rapidity of wound healing are nutritional manifestations which can be readily explained on the basis of thyroid function. Also symptoms of disturbed gastro-intestinal function, most often manifest as diarrhea, were usually evident during the



period of suprarenal insufficiency, most frequently observed at the time of maximal increase in basal metabolism. Furthermore, the profound asthenia of the animals developing in the cases of fatal suprarenal insufficiency bespeaks a fundamental function of the suprarenal in relation to some part of the nerve-muscle motor mechanism. Further evidence of the importance of the cortex as opposed to the medulla in influencing essential tissue functions is indirectly afforded by these experiments. In all cases in which death ensued from the suprarenal insufficiency, whether induced by freezing or ligation, marked damage to the cortex was evident, while the medulla usually retained its normal appearance grossly and microscopically.

It is impossible to study the syndrome of suprarenal insufficiency in cats without being impressed by the points of similarity between it and some of the outstanding features of Graves' disease. The most prominent single phenomenon in each is a significant increase in heat production. Each has a phase of asthenia and exhaustion, with evidence of severe cardiac damage. Diarrhea and nutritional and weight changes are common to each. Hyperplasia of the thyroid is produced in each, and is characteristic of neither. And, finally, that rather unusual form of Graves' disease running a rapidly fatal course in a very few weeks with severe asthenia, prostration, and coma bears a striking resemblance to the effect of fatal suprarenal insufficiency when death is postponed for several days.

H. M. FEINBLATT.

HARRIS, W. H., AND FRIEDRICH, A. V.: **The Experimental Production of Periarthritis Nodosa in the Rabbit with a Consideration of the Specific Causal Excitant.** *The Journal of Experimental Medicine*, August, 1922, xxxvi, No. 2, p. 219.

Earlier studies upon periarthritis nodosa have established it as a specific infectious disease, occurring in man, of unknown etiology, and exhibiting a selective affinity for the vascular system, to which the essential lesions are confined. The disease is characterized especially by the entrance of the injurious agent into the periarterial tissues, and the adventitia and media of the smaller arteries, leading to acute exudation and subsequent degenerative changes. Signs of chronic inflammation associated with proliferative or reparative changes are present in certain of the vascular lesions.

The present report deals with the successful transference of this disease from man to the rabbit. The human virus was obtained from a typical case of periarteritis nodosa. At autopsy the gross and microscopical lesions demonstrated the existence of the peculiar pathology of the arteries characteristic of periarteritis nodosa. Lesions were induced in rabbits identical with those occurring in man. They consisted of exudative and degenerative processes within the walls of the smaller arteries resulting in aneurismal formations and thromboses. The microörganism inducing the disease is capable of going through a Berkefeld N filter and is therefore to be classed with the group of so-called filter-passers.

The disease, periarteritis nodosa, because of its rarity and infrequent recognition during life, has afforded a small field for experimental study. Among 54 reported cases, less than one-fourth record evidences of search for an etiological agent, and among these in only four instances, including the present case, has transmission to animals been attempted. Various opinions have been held as to the manner of invasion of the microörganisms in periarteritis nodosa. The inoculations here reported were made intravenously. It appears probable that the infectious agent is introduced into the outer vascular coats via the vasa vasorum or the perivascular lymph spaces.

H. M. FEINBLATT.

PRYER, R. W.: **Etiology of Scarlet Fever. VI. Variations or Types of the Alkali-Producing Organism in Scarlet Fever.** *The Journal of Laboratory and Clinical Medicine*, July, 1922, vii, No. 10.

At the present time the belief is prevalent that the discharge throat, nose, ear, glands, etc., harbors the virus and that the majority of infections come from this source directly, although indirect infections also occur. In other words the greatest factor in the dissemination of the disease is the carrier, whether he be a recently discharged case or, what too frequently happens, a mild unrecognized case of the disease. The presence of the virus in these discharges is so generally recognized and so evident from an epidemiologic study of the disease that little more need be said.



The organism previously reported from the authors laboratory as found only in scarlet fever shows several varieties, one of which is, under certain conditions, somewhat similar in its morphology to bacillus diphtheria and which may be a toxin producer. Diphtheria antitoxin protects against this culture, providing the antitoxin is given some time before the injection of the culture. A preliminary report is made of results obtained by culturing patients sick with scarlet fever which we believe justifies the tentative conclusion that this variable organism is the cause of scarlet fever.

C. M. ANDERSON.

HUBBARD, R. S., AND WRIGHT, F. R.: **Studies on the Acetonuria Produced by Diets Containing Large Amounts of Fat.** *Journal of Biological Chemistry*, February, 1922, 1, p. 402.

The excretion of the acetone bodies—acetone aceto-acetic acid and B-hydroxybutyric acid—in conditions in which the organism is not utilizing carbohydrate through a deficiency of food-stuff of this kind in the diet through the inability of the organism to metabolize the food when supplied, as in diabetes mellitus, has attracted attention for many years, and a large amount of literature has collected on the subject. In two papers recently published, Shaffer has summarized this literature. In his first paper Shaffer reported experiments on the oxidation of mixtures of aceto-acetic acid and glucose by alkaline hydrogen peroxid which showed that if there were present in the mixture one molecule or more of glucose for each molecule of aceto-acetic acid, the acid was oxidized under suitable conditions of temperature, alkalinity, etc. but that if the relative concentration of glucose was less than this, the oxidation of the keto-acid was not as complete. In the second paper he studied the problem from the point of view of the metabolism of human subjects, and concluded that a reaction of a similar nature takes place in the body. The theory which has been developed in these papers and on which the present paper is based, is that aceto-acetic acid itself is not easily burned in the body, but that it forms with glucose or with degradation products of glucose and related substances, a compound which is easily burned. The ketogenic compounds contained in the diets are the fatty acids contained in the fats and the  $\alpha$ -amino acids, leucin, tyrosin,

phenylalamin, and possibly distidin which forms a part of the proteins. There is probably a molecule of the acetone bodies derived from each molecule of these compounds contained in the diet. The amounts and source of the antiketogenic compounds contained in the diet are more uncertain. Glucose and related sugars, as levulose, form one source of these substances whether taken as the sugars themselves or as the more complex carbohydrates. Protein yields glucose when fed to the total diabetic in amounts which vary with the different kinds of the foodstuff, and some percentage of the protein should therefore be included with the carbohydrate in figuring the total antiketogenic intake. There is, too, considerable data which indicate that glycerol yields glucose under some conditions, and so fat, from which glycerol is produced by hydrolysis in the organism, must also be considered as a possible source of antiketogenic compounds. A method is suggested for expressing the ketogenic balance of any diet mathematically. A series of six experiments is described in which the effect of diet high in fat on the excretion of the acetone bodies by normal subjects was studied and the results compared with this mathematical expression. From the results obtained the following conclusions have been drawn: (1) That the mechanism which controls the formation of increased amounts of the acetone bodies can be regarded as a molecular reaction or balance between ketogenic substances such as the fatty acids and antiketogenic substances such as glucose; (2) that protein figures as an antiketogenic compound only to the extent of the glucose which it can yield in the organism; (3) that glycerol, when fed as a part of the fat molecule figures as an antiketogenic compound only to the extent to which it forms glucose in the organism; and (4) probably that glycerol so fed does figure as an antiketogenic compound to the extent to which glycerol itself can yield glucose.

DENIORD, R. N., AND BIXBY, B. J.: **Studies in Focal Infection.** *The Journal of Laboratory and Clinical Medicine*, July, 1922, vii, No. 10.

All focal infections are divided into primary and secondary. While the secondary infection is usually the source of anxiety to the patient, the primary or inaugurating infective focus is the point of



interest to the diagnostician. The presence of high uric acid in the blood does not point to any particular part of the body as a source. Hence the diagnosis of focal infection made through this medium does not indicate that the teeth or tonsils or any other one organ is at the bottom of the disturbance. But it does point to the necessity for a thorough search for all possible primary foci, and it gives definite authority for the removal of such foci when found. Practice based upon this assumption has been most happy in the results which it yields. Patients invariably show such a measure of improvement as is to be expected according to their history, and the regenerative power of the tissues which are the site of the secondary infections. Moreover when improvement does not occur, or is incomplete, the possible continuance of focal infection will be revealed by a continued high uric acid in the blood. For the uric acid will not return to its normal level in the presence of primary foci of infection, and on the other hand when these foci are completely eliminated, the uric acid content of the blood will be found to come within the normal range.

The authors conclude as follows: Clinicians have at their disposal well established methods of the elimination of uric acid. High uric acid value in the blood is indicative of nuclear degeneration, which in turn may mean focal infection. Other factors productive of high uric acid, aside from nuclear degeneration, are comparatively easy to determine, *i. e.*, leukemia, primary anemias, cachexias from whatever cause, and massive doses of x-ray or radium.

Elimination of all foci of infection invariably is followed by a return of the uric acid to normal. Failure to eliminate all foci will prevent the return to a normal uric acid, and this substance therefore furnishes a reliable index to the complete elimination of foci of infection.

C. M. ANDERSON.

MANN, F. C., AND MAGRATH, T. B.: **Studies on the Physiology of the Liver. II. The Effect of the Removal of the Liver on the Blood Sugar Level.** *Archives of Internal Medicine*, July, 1922, xxx, No. 1, p. 73.

The removal of the liver in dogs results in a very constant clinical syndrome. After recovery from ether, the animal seems perfectly

normal for from 3 to 8 hours. Symptoms then suddenly appear. Muscular weakness, is then noted, with loss of reflexes. After a variable period of this quiet flaccid state, muscular twitching develops, and there is a rather sudden and exaggerated return of the reflexes. General convulsions supervene, in one of which, the animal dies. The average animal, if untreated after hepatectomy, dies within 2 hours after the appearance of the first signs of muscular weakness. A study of the blood sugar in these animals showed that there was a constant fall in this element in the blood, and that symptoms appeared when the blood sugar reached the level of about 0.05 per cent. The authors believe that the fall in sugar is the cause of the symptoms described. The muscle glycogen decreased about 50 per cent in the course of one experiment in which this factor was watched.

T. HOWARD.

HELMHOLZ, H. F., AND MILLIKIN, F.: **The Presence of Bacteria and Formed Elements in the Urine of Rabbits.** *The Journal of Laboratory and Clinical Medicine*, July, 1922, vii, No. 10.

A colon bacilluria associated with other pathologic conditions occurs in rabbits more often than is commonly supposed. It introduces a serious source of error into experiments concerned with the production of urinary infections in rabbits, and demands extreme care in selecting a healthy stock for experimental animals and controls.

C. M. ANDERSON.

NIELSEN, C., AND HIGGINS, J. A.: **Further Observations on the Pharmacology of Benzyl Compounds.** *The Journal of Laboratory and Clinical Medicine*, July, 1922, vii, No. 10.

The authors conclude as follows: Our observations suggest that the relaxing power of benzyl esters in the smooth muscle fibers of the intestine as a rule is dependent upon the benzyl content and upon the rate of hydrolysis of the benzyl compound. In all cases where we have been successful in obtaining comparative records, with the ex-



ception of benzyl salicylate and benzyl acetylsalicylate, we have found that the higher the rate of hydrolysis, the greater the efficiency. According to our findings benzyl fumarate is more efficient than benzyl succinate, particularly with regard to initial action; the succinate is more efficient than the stearate, the acetate more powerful than the cinnamate, which in turn is of higher efficiency than the benzoate.

The higher relaxing power of benzyl salicylate and benzyl acetylsalicylate, in spite of their slow rate of benzyl hydrolysis, may be attributed to their intact molecules. These compounds differ from other benzyl esters in that their molecules contain hydroxyl or substituted hydroxyl groups. The benzyl acetylsalicylate is more efficient as an intestinal relaxant than the salicylate, in fact it is more powerful than any of the benzyl esters investigated by us. Various benzyl compounds other than benzyl esters, namely benzyl phenolate, benzyl ethyl ether, and monobenzyl barbituric acid, as well as benzaldehyde, were also found to possess smooth muscle relaxing properties.

C. M. ANDERSON.

LEE, F. C.: **Changes in the Number of Small Lymphocytes of the Blood Following Ligation of the Thoracic Duct.** *The Journal of Experimental Medicine*, August, 1922, xxxvi, No. 2, p. 247.

Comparative blood counts were made upon young adult cats before and after intrathoracic ligation of the thoracic duct. The ligation produced an immediate decrease in the number of small lymphocytes to the extent of 56 per cent, but it was found that the preoperative level was again reached at about the end of three weeks. It appears established that the thoracic duct is an important avenue for the entrance of small lymphocytes into the blood stream, and that it is the pathway through which at least half of the small lymphocytes reach the circulating blood in the cat. The gradual return of the number of small lymphocytes to the preligation level probably takes place *pari passu* with the establishment of the collateral circulation of the thoracic duct.

H. M. FEINBLATT.

GORINI, C.: **Studies on the Biology of Lactic Acid Bacteria; a Summary of Personal Investigations.** *Journal of Bacteriology*, 1922, vii, 276.

One of the most important characteristics of many lactic acid bacteria is that of possessing acido-proteolytic properties.

The author has often asserted that this activity must take place in natural milk of acid reaction, but that it is not observed in milk which has received the addition of chalk or other substances, since these additions not only alter the composition of the milk but also so alter its adaptability for the growth of the organisms concerned that the natural functions of the latter are no more exhibited.

WARFIELD, L. M.: **Report of a Case of Disseminated Gummatous Sporotrichosis with Lung Metastasis.** *American Journal of the Medical Sciences*, July, 1922, clxiv, No. 1, No. 604, p. 72.

A case of disseminated gummatous sporotrichosis in a young colored man, 23 years old. He was a stable boy. On the left side of the forehead, at the hair line, was a soft painful swelling. Nodules developed at various places on the neck, face, arms, and legs. There was a nodule in the right lung, suspected on physical examination, seen in the roentgen ray plate and confirmed at autopsy, culturally and histologically. This is the first case of its kind reported in American literature. The sporotricha reported from American experiments and some reported from French cases differ in the pathogenicity, and in the ability to produce lung lesions in albino rats. Attention is called to sporotrichosis as a generalized disease and to the probability of cases of lung sporotrichosis which are unrecognized.

A. T. MAYS.

SMITH, T., AND LITTLE, R. B.: **The Significance of Colostrum to the New-born Calf.** *The Journal of Experimental Medicine*, August, 1922, xxxvi, No. 2, p. 181.

The high mortality of calves during the first week of life has been the subject of researches for a number of decades. The difficulty ex-



perienced in keeping calves alive which had not received colostrum from the mother led to a more thorough study of the effect of withholding this first milk. In order to balance as far as possible the many unknown factors, two experiments were carried on simultaneously. One group of calves was to have colostrum, the other not.

All of 10 calves which were permitted to take colostrum after birth survived. Eight out of 12 calves which did not get colostrum died, and one was killed moribund. One calf, killed on the 27th day, harbored miscellaneous bacteria in its organs. The kidneys were sclerotic and one joint diseased. Of the remaining 2 calves, one had transitory joint troubles, the other rhinitis.

Coming to the bacteriology of the fatal cases we meet a definite condition in all of the animals. The spleen, liver, and kidneys contained large numbers of *Bacillus coli*. Each loopful of tissue fluid contained hundreds of bacteria. The inference is that the lack of colostrum permits intestinal bacteria to invade the body and to multiply in the various organs.

H. M. FELSBLATT.

BOAS, E. P., AND FRANT, S.: **The Capillary Blood-pressure in Arterial Hypertension.** *Archives of Internal Medicine*, July, 1922. xxx, No. 1, p. 40.

The authors used micro-capillary tonometer of Danzer and Hooker in studying the capillary pressure of 23 patients having arterial hypertension. The pressure in the capillaries was estimated as that point at which the blood flow suddenly increased in speed, after having been completely obstructed by the pressure. Readings were taken with the hand at heart level and the patient in a sitting posture, at a room temperature of 20° to 25° C. Like other observers they found the pressure varied considerably in different capillaries in the same individual, the pressure remaining practically constant in the same capillaries if the reading were repeated. It seemed that the resistance of the tissues did not modify the reading materially, as has been suggested, as patients with marked atrophy of the skin or with quite a heavy epidermis, did not show corresponding differences in the readings.

In a series of normal controls the author found that the capillary

pressure rarely exceeds 30 mm. of mercury. The average variation in readings in normal individuals was 18 mm. In the group of hypertension patients, many ranged from 30 to 60 and some as high as 70 mm. while the remainder were normal, with a tendency to be low rather than high. The average difference between the high and the low readings with a high capillary pressure was 36.6 mm.

The authors suggest that it is possible that the patients who exhibited the high capillary pressure were suffering from a general capillary disease, with a glomerulo-nephritis as one of the manifestations, while those who had a low or normal capillary pressure represented examples of essential hypertension.

T. HOWARD.

FELTON, L. D., AND DOUGHERTY, K. M.: **The Organotropic, Bacteriotropic and Leukocytotropic Actions of Certain Organic Chemicals.** *The Journal of Experimental Medicine*, August, 1922, xxxvi, No. 2, p. 163.

Present knowledge of the manner by which chemicals influence the mechanism of infection and resistance is limited. This work was undertaken in the hope that information might be gained which would enable a more intelligent choice of chemicals for chemotherapeutic purposes, and might lead to the finding of a delicate indicator by which to judge the relationship between chemical constitution and the activity exhibited by the body against an invading organism. The report includes the toxicity for mice (organotropism), the bactericidal action on *Staphylococcus aureus* (bacteriotropism), and the antiphagocytic influence (leukocytotropism), of certain members of seven groups of chemicals—triphenylmethane leuco bases, triphenylmethane dyes, acridines, safrinines, phenazines, quinones, and cinchonas. All of these chemicals, whether bacteriotropic or not, greatly inhibited the engulfing of *Staphylococcus aureus* by leukocytes. Certain of these chemicals, although bactericidal in a very high dilution,—chemicals in which the concentration of a non-lethal dose was many times greater than that required to kill multiple minimal lethal doses of organisms *in vitro*,—had no certain effect when bacteria and drug were injected simultaneously into the peritoneal cavity of a mouse. In fact, the treated mouse often died before the controls.



There was no consistent parallelism between the bacteriotropic activities and the organotropic and leukocytotropic activities. The leukocytotropic activities were in all instances the most pronounced. Optochin and four of the aromatic cinchona compounds are markedly antiphagocytic in their therapeutic dose. They possess a positive chemotactic action for leukocytes when injected into the peritoneal cavity of the mouse.

H. M. FEINBLATT.

INLOW, W. DE P.: **The Spleen and Digestion. Study II. The Spleen and Pancreatic Secretion.** *The American Journal of the Medical Sciences*, July, 1922, clxiv, No. 1, No. 604, p. 29.

The so-called Smith-Herzen hypothesis in its final form assumed that during the digestive congestion of the spleen a substance is liberated into the blood stream which transforms the zymogen of the pancreas into active trypsin. Many experimental investigations have seemed to substantiate this theory. Many others have seemed to invalidate it. The former have been digestive tests *in vitro* with the use of pancreatic and splenic infusions; the latter have been experiments on animals with permanent pancreatic fistulae. In the present study data are given concerning the pancreatic secretion, before and after splenectomy on two dogs with permanent pancreatic fistulae secreting an inactive proteolytic juice; and on two similar non-splenectomized dogs serving as controls. Removal of the spleen in these instances caused no constant changes in the amount, enzyme content, or alkalinity of the pancreatic juice. It is concluded from a review of the literature, and this experimental inquiry, that a definite trypsinogenic function of the spleen has not been demonstrated.

A. T. MAYR.

KOSTER, S. A.: **Development of Paratyphoid-enteritidis Group in Various Foodstuffs.** *Journal of Infectious Diseases*, July, 1922, xxxi, No. 1, p. 79.

The aim of the present investigation has been to gain some idea of the ability of several type strains of the paratyphoid-enteritidis

group to develop in various foodstuffs, such as vegetables, fruits, water, and evaporated milk. The effects of different conditions such as temperature of incubation, the hydrogen-ion concentration, and the texture of food, were considered in relation to multiplication and ability to spread throughout the foodstuff.

All the strains of the Gaertner group multiply readily in the liquor of several common cooked vegetables, with the exception of a highly acid sauerkraut. In the fruit juices a rapid destruction of the organisms occurred. In several meat products Gaertner group exhibited a marked ability to spread from one original point of inoculation throughout the foodstuff, although this occurred only under optimum temperature conditions.

The development of the Gaertner group in foodstuff is usually not accompanied by visible alteration or spoilage. The present observation on this point are in accord with the reports of previous outbreaks of "food poisoning" caused by this group of organisms.

M. M. BANOWITCH.

VALENTINE, E., AND KRUMWIEDE, C.: **The Loss of Hemolytic Capacity by a Fraction of a Culture of a Hemolytic Streptococcus Without Change in Agglutination Characteristics.** *The Journal of Experimental Medicine*, August, 1922, xxxvi, No. 2, p. 157.

The partial or complete loss by the hemolytic streptococcus of its ability to hemolyze red blood-cells having previously been recorded, the authors decided to report comparative observations, with especial reference to agglutination characteristics, on a strain of hemolytic streptococcus which has developed a non-hemolytic fraction. The strain employed was isolated from the lung at autopsy in a case of bronchopneumonia following measles during the latter part of 1919, and has been maintained on blood-streaked agar. For more than a year, no change was noticed in this culture as regards hemolytic or agglutination characteristics; but, when plated in April, 1921, it was found that 10 per cent of the colonies showed no evidence of hemolysis but resembled closely a pneumococcus colony. Isolations from both the hemolytic and green types of colonies were made and replated for purity. In every instance since the cleavage was noted the substrains have bred true. In no case has any change been noticed in the colony



characteristics on blood agar. As determined by its agglutinogenic agglutination, and agglutinin absorption characteristics, the non-hemolytic fraction was identical with the hemolytic portion, the only variation being one of function, or physiological action. This functional variation has proved permanent, inasmuch as both fractions have continued to breed true. This study is offered as additional evidence in favor of the hypothesis that functional changes among bacteria are, at most, only very infrequently associated with changes in the antigenic matrix of bacteria.

H. M. FEINBLATT.

GREENTHAL, R. M., AND BROWN, R. M.: **Studies on the Nature of Non-Specific Protein in Disease Processes. IV. Blood Fragility, Reticulation, and Blood Chemistry.** *Archives of Internal Medicine*, July, 1922, xxx, No. 1, p. 99.

The blood of patients who were being treated by means of intravenous injections of killed typhoid bacilli was studied, and the changes compared with those found in the presence of anaphylactic shock, as it has been suggested that protein shock and anaphylactic shock may be identical. The results showed some differences in the blood in these two conditions. In protein shock the authors found a slight increase in fragility of the erythrocytes, but no change in the per cent of reticulated reds. There was a moderate rise in the urea and total non-protein nitrogen at the height of the fever. There was a short moderate fall in the alkali reserve. The lipoids were somewhat decreased. The blood sugar curve was slightly increased. The authors conclude that the so-called protein shock and anaphylactic shock are different phenomena.

T. HOWARD.

HERTOGEN, L., AND SCHUBOF, K.: **On Specific Erythroprecipitins (Hemoglobin Precipitins).** *Journal of Infectious Diseases*, July, 1922, iii, No. 1, p. 32.

The results appear to indicate that hemoglobin may be a specific antigen and thus they may help to throw light on its constitution.

Aqueous extracts of red corpuscles give rise in rabbits to precipitins the action of which appears to be limited to erythrocytic constituents, in some cases of the species, furnishing the corpuscles only, in other cases extending also to such constituents of related species. While other antigens may be present in crude aqueous extracts of corpuscles, the main precipitinogen seems to be hemoglobin, which is shown to be a specific precipitinogen.

Conversion of the hemoglobin in extracts of red corpuscles into carboxyhemoglobin, sulphydrohemoglobin or methemoglobin does not affect the specific serum precipitation of the hemoglobin.

On splitting hemoglobin into hematin and globin by means of acetic acid, the precipitinogenic elements remain in the solution after removal of the globin, which does not appear to be responsible for the antigenic properties of the hemoglobin, the globin-free solution, however, being antigenic not only in tests with antiserum but also on injections in rabbits.

While the precipitinogens in extracts of red corpuscles and in hemoglobin may exist independently of hemoglobin after treatment with acids, they ordinarily are attached closely to the hemoglobin molecule, not being removed or diminished in proportion to the amount of hemoglobin by repeated crystallization or by treatment with aluminum cream, the antigen being apparently either closely absorbed to the hemoglobin molecule or forming a part of it which can be split off by acids.

M. M. BANOWITCH.

GOMPERTZ, L. M., AND VORHAUS, M. G.: **Observations on *Bacillus Acidophilus*: Its Bacteriological Characteristics and Possible Therapeutic Significance.** *The Annals of Clinical Medicine*, July, 1922, i, No. 1, p. 33.

Stimulated by the brilliant bacteriological work of Rettger, the authors began a series of clinical investigations with cultures of *Bacillus acidophilus*. They used milk as culture medium at first, but later turned to a broth culture in which this bacterium grows luxuriantly. The technic of the preparation of this broth is as follows:

"(1) To 1000 c. c. of distilled water add 4 grams Liebig's meat extract, 10 grams peptone (Mercks) and 5 grams sodium chlorid: NaCl.



(2) Heat over free flame until thoroughly dissolved, stirring constantly.

(3) Titrate and adjust to required reaction; pH 6, 9-7.0 *neutral*.

(4) Sterilize in 1-liter flasks for one hour in Arnold sterilizer.

(5) Filter bouillon cold the next day through filter paper, until clear.

(6) Add to clear bouillon, to 1000 c. c. 50 grams of lactose: five per cent: shake well until sugar is dissolved.

(7) Pour media in flasks (300 c. c.) in  $1\frac{1}{2}$  liter flasks.

(8) Place the flasks stoppered with cotton in the autoclave for *twenty-five minutes* and sterilize at *15 pounds pressure*."

The authors conclude that when cultures of *Bacillus acidophilus* are given by mouth colonies implant themselves in the intestinal tract and *Bacillus coli* are markedly decreased. Clinically the administration of *Bacillus acidophilus* in cases of chronic constipation was followed by relief of the constipation and improvement in the so-called tonic symptoms; and symptomatic improvement was noted when the cultures were administered in chronic diarrhea.

CLARK, P. F., AND MURPHY, E. J.: **Immunity in Experimental Pneumonia.** *Journal of Infectious Diseases*, July, 1922, xxxi. No. 1, p. 51.

Clinical observations have shown that an attack of pneumonia is not as a rule followed by lasting immunity. Rather the contrary is true. Are the frequent recurrences of pneumonia then, due to the nature of the organism causing the disease or to some property peculiar to the lung tissue? Is it impossible for infectious processes in the lungs to stimulate the production of any considerable amount of antibodies? Since it is feasible to produce pneumonia experimentally by the use of certain Gram-negative organisms which commonly induce a persistent immunity of marked degree, it has seemed possible to answer these questions. We have so little knowledge and control of the spread of respiratory infections that such answers ought to be of some value.

*Bacillus typhosus* was chosen for the work planned, because it is a Gram-negative organism which stimulates a high degree of immunity and is capable of exciting a pneumonic process when it is lodged in the lung.

As a result of their study on rabbits the authors conclude:—

(1) That the infection of *Bacillus typhosus* by the intratracheal route causes broncho-pneumonia, and coincidentally with recovery specific agglutinins are found in the blood.

(2) That the agglutinin titer in the group animals with pneumonia does not reach as high a level as in the group of intravenously treated animals but the peak of the curve is reached on the same day, the eighth following the injection of the bacteria.

(3) That the failure of attacks of pneumonia to produce any considerable immunity is probably due, therefore to the nature of the organism causing the disease rather than to any peculiar properties inherent in the lung tissue.

M. M. BANOWITCH.

CHRISTIE, C. D., AND BEAMS, A. J.: **The Estimation of Normal Vital Capacity with Special Reference to the Effect of Posture.** *Archives of Internal Medicine*, July, 1922, xxx, No. 1, p. 34.

In a study of the vital capacity of normal individuals, Christie and Beams took the occasion to note the different figures obtained in the erect and recumbent positions. The subjects studied were mostly medical students and nurses, varying from 20 to 30 years of age, all having recently had a physical examination. One hundred and six men and 144 women were examined and in all it was found that the vital capacity averaged 5.5 per cent less in the lying than in the sitting posture. Eighty per cent of the individuals breathed less when lying than when sitting, and 20 per cent breathed about the same or more. Stout women invariably breathed more, considerably, sitting than lying.

The authors reaffirmed the fact that individuals of the same age and body weight vary greatly as to their vital capacity, but that individuals of the same sex and body surface are surprisingly alike in their vital capacity. It was found that only about 8 per cent of all the males and about 9 per cent of all females, when grouped accord-



ing to body surface, missed their respective group average by more than minus 10 per cent.

The authors conclude from their figures that a female from 20 to 30 years of age, with a body surface of 1.4 to 1.5 sq. mm., had a vital capacity of 2700 c. c., and for each gain of 0.1 sq. mm. in body surface the vital capacity goes up about 175 c. c. A male from 20 to 30 years of age, with a body surface of from 1.6 to 1.7 sq. mm. has a vital capacity of about 4000 c. c., and with each gain of 0.1 sq. mm. the vital capacity goes up 350 c. c. From this data it is concluded that a normal male between the ages of 20 and 30 has a vital capacity of 2.5 liters per sq. mm. of body surface, and that a normal female between 20 and 30 has a vital capacity of 2 liters per sq. mm. of body surface.

T. HOWARD.

CROSS, B. F.: **The Significance of Variation in the Quality of the Heart Sounds.** *New York Medical Journal*, January 18, 1922, xxy, No. 2, p. 86.

*Production, Character and Time of the First Sound.*—It is produced by the closure of the auriculoventricular valves (the mitral and tricuspid), and by the contraction of the ventricles.

The normal first sound is dull and heavy. Brockbank calls it "deliberate." Through the preponderance of the left side of the heart in the mechanism of the heart-beat, and the greater work of the left ventricle and the greater intra-arterial resistance which its work must overcome, the mitral sound is louder and dominates the precordium.

The first sound occupies only the first part of the ventricular systole, so there is opportunity for a late systolic murmur occasionally noted, as well as the murmur which accompanies or replaces this sound. It (the sound) may be heard in varying intensity. Thickness of the chest wall, the interposition of emphysematous lung, pericardial fluid and weakness of the cardiac systole diminish the sound; it may be increased by exertion, fright, or the initial stimulus of bacterial toxin.

*Production, Character and Time of the Second Sound.*—It is produced by the closure and vibration of the aortic and pulmonary

valves, following ventricular contraction. These are three cusp valves, with no chordæ tendinæ or muscular structures comparable to the papillary muscles, and are largely fibrous inelastic valve curtains. At the middle of their free borders are the corpora arantii. During ventricular systole, the valves lie against the arterial walls, but close with a snap when the contraction terminates and the pressure in the elastic blood-vessels more than equals the intraventricular pressure.

This sound is short, sharp and is spoken of as purely valvular. The term *hubb-dupp* is descriptive of the two sounds. It is at the very beginning of ventricular diastole and therefore can be followed or accompanied by diastolic murmurs of defective valve origin.

*The Third Heart Sound.*—In 1893 Barie reported a third heart sound, and in this country Thayer called attention to it in 1906. A better term is the diastolic echo, for it immediately follows the second sound, and probably corresponds to the end of the rapid rush of blood into the ventricles and the preliminary apposition of the mitral and tricuspid valve curtains which the blood pool has floated up into place. It is present occasionally in normal persons; is often very faint and distant, and is heard in slowly beating hearts with the patient in the left lateral prone position. The electrophonograph seems to establish its real existence, and in the polygraph it would seem to correspond to the *H* wave (the protodiastolic). In mitral stenosis and aortic regurgitation, when the filling conditions in the ventricle are disturbed, it may be recognized. It is not of great significance.

*Events Transpiring During the Heart Sounds.*—When the first sound is occurring, the auriculoventricular valves are closed, the ventricles are contracting and a large volume of blood is being delivered into the aorta and pulmonary artery through the open aortic and pulmonic valves respectively. Meanwhile the auricles are sluggishly refilling with blood from the systemic and pulmonary veins. When the second occurs, the aortic and pulmonary valves are closed, the auriculoventricular valves are open and the ventricles are beginning to fill as the joint result of gravity and vis-a-tergo. The ventricular filling is assisted by the weak systole of the auricle, which occurs in the last fifth of ventricular diastole.

*Variation in the Quality of the Sounds.*—Variations in the quality of the first sound results from changes in the valve cusps, the



cardiac muscle, or the blood-pressure, operating singly or together or by local conditions in the pericardium. The first sound may be weakened, absent, increased, accentuated, or reduplicated.

*A weak first sound* is due to an enfeebled cardiac musculature and is seen in longstanding infections, typhoid, tuberculosis, diphtheria, scarlet fever, rheumatic fever, and exhausted physical states, or in chronic or primary myocardial degeneration; it may be due to fibrous thickening of the mitral and tricuspid valve segments, which causes them to close stiffly and slowly. Or thinning of the ventricular wall, with dilatation, produces a poor first sound, the muscle factor being decreased relatively as the valvular component is accentuated. Low blood-pressure and pericardial effusion, emphysema, excessively fat chest-wall, all affect the sounds.

*The first sound is absent* when the ventricular systole is of very poor force or a loud systolic murmur masks the normal sound. Sometimes the first sound has a tympanitic quality, when the stomach is much distended with gas.

*An increased first sound*—dull, prolonged, thudding, booming—accompanies ventricular hypertrophy uniformly, is due to the accepted muscle-volume-sound-production phenomenon, and must be differentiated from accentuation. In the influenza pandemic a curious flapping first sound, short, hollow, and markedly increased in force, was heard in certain cases with pneumonia and low blood-pressure.

*Accentuation of the first sound*, following exercise quiets down quickly with a few minutes rest, if the response to exertion is normal. When the ventricles are dilated, the valves are more suddenly closed as the papillary muscles have lost in part their elastic pull, and the valvular quality becoming relatively predominant through the recession of the emphasis of the muscular factor. With thickening of the valve cusps, as occurs in mitral stenosis there is explanation of the sharp, short, flapping or snapping first sound of mitral disease.

*Reduplication or splitting of the first sound* results from the fractional difference of time in the contraction of the two ventricles. It occurs in myocardial failure, with or without increased blood-pressure. Here there is the loss of potent pull of the papillary muscles and the secondary relaxation of these muscle bodies and their resultant action as mere stay ropes, instead of elastic muscle tissues gradually meeting the strain of the ventricular systole, permits the

valves to fly back into a state of secondary tension and produce the reduplication, which thus is part muscle vibration and part identifiable valve closure sound. Reduplication is represented by the word "*ten-up*". It may be heard in the normal heart functionally disturbed, and occurs then in the deflated chest on deep breathing.

*Variations in the Second Sound.*—It is weak when the cardiac muscle has lost power and blood-pressure is low.

In mitral stenosis the second sound is weak through the lessened volume of blood thrown into the aorta. When ventricular hypertrophy occurs, the apex of the left ventricle is pushed away from the chest wall by accompanying conditions on the right side of the heart: the aortic second, which sound is heard at the true apex of the heart, becomes fainter, as the apex recedes from its contact with the chest wall. Hence, the greater the apex recession, the fainter second sound at the apex in mitral stenosis, the more serious the mitral lesion.

It may be absent if the valve cusps are thickened by fibrotic change and cannot functionate normally. A murmur, due to aortic regurgitation, may replace the aortic closure sound, or it may accompany such sound, modifying its intensity.

In aortic stenosis, we would expect the second sound to be absent as but little blood is thrown into the aorta and the valve curtains fill slowly and inadequately.

*The accentuation of the second sound* has varied significances. It comes at the end of deep breathing, when the breath is held. There are differences in the relative intensity of the aortic second and the pulmonic second at different ages in life. In childhood and adolescence the pulmonic second sound is louder than the aortic second, from 25 to 45 pulmonic second and aortic second sounds are about the same: after the fiftieth year the aortic second is louder.

*The aortic second sound is markedly accentuated* with high blood-pressure of simple hypertension or that of chronic nephritis. When the aorta is dilated, the second sound may be ringing or clanging. The valves are crashed together by the unusual volume of blood in the expanded aorta, and valves and arterial wall vibrate excessively to produce this sound. The thickening of the valve cusp borders and the calcareous roughenings and irregularities contribute to this functioning of these valves. At times we may note the so-called bottle popping character of the second sound which accom-



panies excessively high blood-pressure cases with distinct aortal dilatation.

*The accentuation of the second pulmonic sound*, occurs in early mitral disease. It is sharper, shorter and cleaner cut. As stenotic changes occur, the volume of blood entering the left ventricle is decreased, and there is a sharp contractive effort resulting, which gives the knocking first sound, slaps the examining hand held to the precordium, and through back pressure closes the pulmonic valves with a sharp snap. When the stenosis, increasing, leads to later stages of mitral disease, the second sound over the pulmonic area continues accented, but the second sound at the apex, as transmitted downwards, is gone.

In lobar pneumonia the accentuation of the second pulmonic sound is important, due to relative obstruction in the pulmonary circulation at the site of the lung lesion. If the accentuation persists, the prognosis is favorable, other phases of the pneumonia being satisfactory; if the accentuation begins to fade, the right ventricle is not emptying completely, but losing power and beginning to dilate. Both auricle and ventricle participate in this dilatation; the pulmonic second sound accentuation decreases, tricuspid regurgitation becomes eminent, and the prognosis grave.

*Reduplication or splitting of the second sound* is due to asynchronous closure of the aortic and pulmonary valves, and in mitral stenosis may be accounted for by the quickness with which the poorly filled left ventricle throws its content of blood into the aorta, the aortic valves closing a trifle sooner than the pulmonary. Also noted in hypertension of either systemic or pulmonary circulation.

*Normal Lubb-Dupp (3-5) Rhythm and Its Disturbances.*—In tie-tac rhythm (fetal) the spacings are equal and the sounds much alike in quality. In diseased states, weak and exhausted conditions, it means myocardial failure.

In gallop or cantering rhythm, three sounds are heard, there being marked reduplication of either the first or second sound. Here, because of the difficulties in timing the sounds accurately, dependence should be placed on the carotid pulse, which is only .05 minute (one-twentieth second) later than the ventricular beat. Any one of three sounds may be accented. The split or reduplicated first and second sounds are the more easily recognized: to wit, ter'-up-tup, ter'-up-tup, and lub-ter'-up, lub-ter'-up.

When the accent falls on the second phase of the reduplicated sound, it suggests a gallop. Thus, ter-up'-tup, ter-up'-tup, the extra sound being in presystole and the arrhythmia called the presystolic gallop, in which a similarity to the repeated word "symbolic-symbolic" has been noted by many writers. However it may be the second phase of a doubled second sound which is accented, the sounds being represented by lub-ter-up. As diastole is infringed upon, this form is spoken of as the protodiastolic gallop.

The presystolic gallop occurs chiefly in high blood-pressure cases with dilatation of the already hypertrophied ventricle, and occurs occasionally in severe acute infectious disease. The protodiastolic gallop is identified in slow hearts, and appears in cardiac asthenia of severe degree.

When the diastolic or rest interval is shortened and the sound heard is in middiastole cardiac exhaustion is most apt to succeed upon lessening of the duration of the periods of ventricular rest. In hypertensive and known myocardial cases, the outlook is correspondingly grave as the rest interval is shortened.

J. ROSE.

ROSE, R. H.: **Weight Reduction and Its Remarkable Effect on High Blood-pressure.** *New York Medical Journal*, June 21, 1922, cxv, No. 12, p. 752.

The author has noticed a rapid fall in blood-pressure during the process of weight reduction through dietetic adjustment. This has occurred almost uniformly and it is fair to conclude that weight reduction through regulation of diet is one of the chief therapeutic measures to be used in the treatment of high blood-pressure. In fact if Bright's disease, focal infections, and conditions in which other treatment is clearly indicated are excluded, diet and treatment of the intestinal tract seem almost certain to reduce the high blood-pressure. Furthermore, it is not difficult to maintain the blood-pressure at a lower point by normalizing the diet after it has been once reduced in this way.

Whether obesity is considered an entity or not it is associated with many symptoms which are relieved as weight decreases. It matters little to the patient whether these are symptoms of obesity or of its complications. The most frequent symptoms are palpitation



of the heart, dyspnea on exertion, pains in the knees, ankles, feet and other joints, difficult walking and impairment of activity. Arteriosclerosis, edema of the ankles, albuminuria, gout, myositis, neuritis, lordosis, flat feet, intestinal toxemia, vertigo, eczema intertrigo and hypothyroidism are complications.

Within the first 48 hours after a weight reduction diet has been started a marked relief is felt by the patient from the shortness of breath and palpitation of the heart. Walking becomes easier because of this relief of the heart and the breathing. It is not long before stiffness and painful joints begin to improve and they are frequently cured entirely.

An initial drop in the systolic blood-pressure of twenty points in the 5 to 7 days is not unusual. It is easy to understand what this means to an embarrassed heart which has been working against a blood-pressure fifty to a hundred points above normal. The edema rapidly disappears. The albumin in the urine likewise disappears when it is due to congestion of the kidneys. After the blood-pressure has reached a point sufficiently low entirely to relieve the embarrassed heart, edema and albuminuria from congestion of the kidneys seem to be completely cured. When headache is due to high blood-pressure or the resultant kidney congestion, it also yields to this treatment. Vertigo and fainting, which were present in two of the cases here reported, were cured. Intermittent pulse is another symptom which improves.

Gouty manifestations are greatly benefited by the low diet used for weight reduction unless the mistake is made of using too much meat and highly seasoned food. A weight reduction diet should be low in carbohydrates and fats. The amount of protein allowed should be moderate. The drinking of large quantities of water, thereby increasing elimination, is of great advantage while weight is being lost.

This is particularly necessary in the gouty cases. A recent popular book, of which several hundred thousand copies are said to have been sold, recommends an unbalanced, unscientific diet.

Whatever may be the causes of diabetes, over-eating is certainly a factor. As a prophylactic measure against diabetes, dietetic restriction for weight reduction or for the prevention of weight increase in those inclined toward obesity is undoubtedly highly important. It is difficult to estimate its full value.

## SECTION ON PEDIATRICS

HOFFMAN, F. L.: **The Influence of Weather Conditions on Morbidity in Early Infancy.** *New York Medical Journal*, 1922, cxv, 145.

The average temperature during this test for July and August was between 71° and 72° F., a very mild summer. The normal temperature usually averages nearly 2 degrees higher.

The whole question of weather conditions, he does not take up at this time.

There is an excessive sickness frequency in diarrheal diseases shown, and the maximum temperatures coincide with high minimum temperatures. For instance, if the maximum temperature exceeds 70°, while the minimum temperature exceeds 60°, the normal sickness rate from diarrheal diseases is much greater under one year of age, being ten times the prevailing rate during cool days.

He further concludes that a study in the field of practical meteorology would be of value in forecasting epidemic outbreaks of infantile diarrhea. This especially applies to diarrheal disease of infants under one year.

KOPETZKY-SCHWARTZ: **Limitations of the Re-incision of the Tympanic Membrane.** *Archives of Pediatrics*, xxxix, No. 2, p. 86.

The author again brings out the value of early myringotomy in prevention of mastoiditis due especially to stagnation. It is contended that re-incision can be locally used only in infants, since then the antrum is above the tympanic cavity and may be drained successfully. The importance of the coalescent type of mastoiditis suggested by high temperature, pain in the ear, and only slight sero-



purulent discharge on myringotomy, running a septic course known as "hemorrhagic mastoiditis", with frequent meningitic or blood stream complications in neglected cases, was discussed. Early mastoidectomy was urged.

Since the best results from repeated incisions are often either the complexities of chronic otitis media purulenta with incident impairment of hearing or a necessarily radical late operation, early simple mastoidectomy is much to be preferred.

C. A. WEYMULLER.

**CALVIN, J. K., AND BOROOSKY, M.: Results Following the Administration of Alkali Phosphates to Spasmophilic, Rachitic and Normal Infants.** *American Journal of Diseases of Children*, xxiii, p. 238.

The findings of Binger, Howland and Marriott, and other authors were briefly reviewed, resulting in the discussion of the relation of the low calcium content of the blood to the phosphorus content of the blood in the works on spasmophilia. The work was more particularly stimulated by the claims of Jeppson and Klereker who stated that they were able to produce symptoms of spasmophilia in normal and latent spasmophilic infants by the increasing administrations of alkaline phosphates; numerous case reports were compiled by the authors, particularly since it seems fairly established that rickets and spasmophilia are closely related clinically, and their blood calcium findings and their phosphorus readings are consistent with this view, contrary to the Jeppson and Klereker inference. Certain of the subjects were rachitics and therefore probable latent spasmophilics and others were cured spasmophilics to whom large amounts of cod-liver oil with phosphorus had been administered, and still others were suffering from predisposing intercurrent infections. To all these cases varying mild large amounts of diorthophosphates of sodium and potassium were given without activating latent spasmophilia or producing any sign of tetany in any of the aforementioned subjects. The author therefore disagrees with Jeppson and Klereker since the latter were unable to produce any of the spasmophilic symptoms by administering alkaline phosphates.

C. A. WEYMULLER.

PUTNAM, J. J.: **The Ideal Weight In Children.** *Archives of Pediatrics*, xxxix, No. 217, p. 71.

A preliminary statement points out the steady loss in the per cent gained in weight and height with advancing age, and the factors chiefly influencing this are enumerated. They include nationality, environment, physical defects, quality and quantity of food, and social status. Under these he considers social status most important, stressing favorable influence of out-door environment, probable good quality and quantity of food under good circumstances and mentioning tendency of under-fed ambitious children to "run themselves thin" in competition with normal children. He considers medical supervision for low-grade defects of paramount importance.

Numerous facts garnered from literature were enumerated, the most interesting seeming to be:

- (1) That growth is least in summer and greatest during autumn.
- (2) That as the child approaches adult type it most rapidly changes according to its inheritance.
- (3) Immediately following puberty there is a marked increase in height accompanied by weight increase.
- (4) Girls presented the extremes, being heaviest or lightest for their heights.

In the light of all these facts an ideal weight chart excluding deficient children was given, the subjects including, first, a series of 2231 males and 2295 females from 2 months to 7 years of age, taken by Dr. Anna Kude in health campaign work and, second, 500 males and 157 females in Boston Private Schools.

The author summarizes in finding the second series to be ideal and recommends it as a weight table.

C. A. WEYMULLER.

GREEN, C. H.: **Chronic Diffuse Nephritis in Children.** *Report of a Case with Review of Literature.* *American Journal of Diseases of Children*, xxiii, p. 133.

The author reports a case of this extremely rare condition, the caption comprehending only primary chronic, diffuse nephritides, and definitely excluding cases of syphilitic and postscarlatinal origin.



The following features were prominent in this case:

(a) *Clinical*.—A 4-year-old child presenting merely a difficult feeding history became ill with "nervousness, convulsions and vomiting". The physical findings were of mitral insufficiency, coma of apparently uremic type, malnutrition and rickets. Urine analysis showed albumin, specific gravity 1018, some pus and no casts. The course was of uremia, having typical blood chemical findings, terminating after an observed illness of twenty-two days.

(b) *Pathological Findings*.—Heart enlargement, arteriosclerosis of the mitral valve, thickening of the aortic valve with advance on ascending arch of the aorta and no hepatic or splenic changes. Kidneys were small and pale with marked scarring and firmly adherent capsule and a considerable obscuring of the renal architecture. Microscopically, the glomeruli were markedly altered to obliteration and replacement by scar tissue. The tubules were distorted by diffuse scarring and there was marked round-cell infiltration throughout. Kidney pelvis was normal.

The author proceeded to abstract the 19 cases in the literature meeting his definition and illustrated by his case, the tabulation concluding the following: chronic, diffuse nephritis is a distinct, clinicopathologic entity of probable congenital origin, indefinite of etiology; its features are functional insufficiency dating from infancy accompanied by developmental disturbances with associated stunting and backwardness in growth, difficulty in feeding, anemia and rickets. The urinary findings uniformly showed large volumes of dilute urine with low specific gravity, having slight amounts of albumin and few casts; the course was uremic and the pathologic findings, as typified in his case, are those of chronic diffuse nephritis of adult life.

C. A. WEYMULLER.

CARR, W. L.: When Shall the Membrana Tympani be Incised and When is Re-Incision Indicated? *Archives of Pediatrics*, iii, No. 2, p. 91.

A routine examination of the throat and ears is recommended in all acute, infectious diseases, and where doubt exists as to the cause of irregular, high temperature, with or without local pain in the ear. Early incision is indicated when temperature, local pain, bulging and

redness of the drum are present, although nasopharyngeal applications of argyrol with adrenalin solutions may serve to abort the attack by enhancing eustachian tube drainage. In severe, acute infectious diseases early incision is recommended where signs are present as prophylaxis against chronic ossicular processes. Where earache is associated with hay-fever, gastro-intestinal upset and chronic nasopharyngeal individual and selected cases may be relieved by incision, though local heat; nasopharyngeal applications of argyrol and instillations of warm boric acid solutions into the ear may relieve it. Novocain with adrenalin solution in the ear seems to be of value, though laudanum and warm oils seem not to be totally efficacious.

Cultures showed the following to be the most frequent infecting organisms in the order named. (1) Streptococci; (2) various types of pneumococci; (3) Friedlander's bacilli; (4) staphylococci; and (5) bacillus catarrhalis.

Re-incision of the membrana tympani is advised when drainage is blocked either in the eustachian tube or by the sagging of the walls of the external auditory canal or when the conditions indicating the original myringotomy repeat themselves.

C. A. WEYMULLER.

SOUTHWORTH, T. S.: **A Critical Consideration of the Four-Hour Nursing and Feeding Interval.** *Archives of Pediatrics* 1922, xxxix, p. 84.

The author believes this continental plan too sweeping for universal application and more especially well adapted in the "period of adaptation" postpartum while mother and baby are getting their balance. It seems favorable in normal breast-fed babies receiving a good, abundant supply of milk, babies who formally did well on 2, 3 or any other hour intervals. It is an advantage in tender nipples, when the breast milk is too high in fat during the adaptation period, and when the mother will be helped by a recreation period. It is most disadvantageous in weak, premature babies, in the sluggish and dormant type of infant, and in the congenitally weak baby who might be working on malformed nipples. These disadvantages would be seriously aggravated by nervous inexperienced mothers, or by failing



to stimulate by frequent nursings a scanty and insufficient breast milk, or by lengthening the interval by substitution of cow's milk formula for a nursing. The latter is a scientific way to dry up breast milk.

In conclusion, the acceptance of any hard and fast rule is a retrograde step, at variance with our best traditions, since the needs of the individual must be carefully weighed with reference to this factor of interval as well as to all other factors in infant feeding.

C. A. WEYMULLER.

THOMPSON, A. R.: **Some Cases of Incontinence of Urine.** *British Journal of Children's Diseases*, 1922, xix, p. 16.

Every young patient suffering from incontinence of urine, should be examined so as to exclude the following:

(1) Gross surgical conditions such as stone or tuberculosis of the urinary tract.

(2) Definite nervous lesions such as may be associated with spina bifida.

(3) Paralytic distention of the bladder which is associated with muscular failure of the bladder and overflow of the urine.

Finally in females we must exclude in addition vesico-vaginal fistula, which may be formed quietly and quickly, owing to some unsuspected conditions. After a diagnosis has been made of incontinence, 2 minims of tincture belladonna and  $\frac{1}{4}$  grain thyroid extract two or three times a day are prescribed either together or separately. If at the end of two weeks, there is no improvement, the following local treatment is instituted in addition. A moderate sized catheter is passed and fluid funneled in under a pressure at first of 75 cm. and later under 150 cm. if necessary. Boracic acid may be used. The quantity injected varies with the age and size of the patient, about 6 ounces to be used in children under 4 years of age, 8 ounces under 8, and 12 ounces under 16. The fluid should be passed after the removal of the catheter and at the next sitting a larger quantity passed. Three days should elapse between sittings. In older children, there is an additional step, instructing the patient during the act of micturition to stop micturating two or three times. This puts the compressor urethra muscle into action. The treatment aims at

dilating the bladder muscle and training the micturition-controlling muscles to work more efficiently. The author claims he has not had a failure with this method of treatment.

M. B. GORDON.

DESANCTIS, A. G.: **Egg Yolk in Infant Feeding.** *Archives of Pediatrics*, 1922, xxxix, 104.

During the last two years the author has used this as an adjunct in difficult feeding cases. In the first case in which it was tried, an infant three months old had not been gaining; when food was increased, it was vomited. One teaspoonful of the yolk of a soft boiled egg was then added daily to the formula. Response was immediate, child gained in weight, and general condition improved, yolk was increased until the whole of it was taken daily. Infant gained from 8 to 12 ounces weekly. "A writer believes the gain in weight was due to the addition of the fat soluble B vitamin contained in the egg yolk." It has since been used in many cases with the same result. It can be given with safety to infants as early as the second month, and it rarely causes gastro-intestinal upset. "In my experience it is very valuable in: First, athreptic infants; and second, infants receiving the maximum amount of food (65 calories per pound per day and one-half ounce orange juice) and still not gaining."

JOSEPHSON, E. M.: **Child Health in Europe.** *Medical Record*, 1922, ci, 101.

It has never been realized before what is the profound effect of war on the succeeding generation and the dependence of the future of the nation upon the welfare of its children. After the World War, some of the nations made a rapid recovery and turned with the keenest interest to the welfare of their future citizens, while others found the health of their children even further injured by the deprivations of the first year of peace.

The author brings out the serious effects of war and outlines some of the measures which have been taken to preserve life and build up a sturdy child population.



*France.*—Studies on thousands of children show that about 91 per cent were below weight. These retardations were reflected in the intellectual development of the children. Mental tests showed that children between 10 and 13 years were retarded on the average one-half year. The most striking results obtained were secured in the summer camps. It is reported that, in 1920, an average of 75 per cent of the children who were in camp gained in weight, that the average gain was 2 cm. in height, and that 75 per cent showed a marked mental improvement. The lasting benefit is attested to by the fact that 80 per cent of them had no illness which required absentsing themselves from school the following year. By efficient post-natal care, infant mortality has been reduced in the same area. During the war milk supply was reduced one-half in Paris, even though many measures were taken to overcome this shortage.

*Czecho-Slovakia.*—This country does not yield sufficient food-stuff for the population. The high cost of food has caused a large number of children to have eye diseases as well as tuberculosis. The average mortality rate has been about 186 per 1000 births, which means over 50,000 infant deaths a year. During the same period Moravia and Bohemia had a tuberculosis death rate of 328 per 100,000, higher than that of any other of a list of nine civilized nations.

*Austria.*—Studies made between 1916 and 1919 show: (1) The weight of all young babies was 15 and 20 per cent under normal; (2) children between 1 and 4 years averaged 33 per cent below normal weight. Of the poor and middle classes, 90 per cent showed more or less signs of rickets and anemia. An interesting effect of the milk shortage is the marked reduction of the infant mortality due to intestinal diseases in Vienna in 1920, due in part at least to the fact that the mothers were forced to nurse their babies. A survey of 4,169 children in the city of Salzburg, found 3,455 of them undernourished.

*Poland.*—The miserable plight of the children of this country was one of the most pitiful consequences of the war. A survey of the health of the children showed that the average weight of the children was 23 per cent below normal at one year of age, and dropped to 35 per cent below at 5 years. Starvation edema was present in 1 per cent of the children in first year of life, 13 in second year, 10 in third, 8 in fourth, and 7 in the fifth. Among children 4 to 5 years old,

4 per cent had never been able to walk. Of the children 5 years of age, 26 per cent showed signs of tuberculosis.

*Conclusion.*—There has been in the last year a marked improvement in child health in the countries considered, as compared with conditions existing during and shortly after the war. This is true, with several exceptions, of all the European countries. A gradual return of normal conditions and the general help of the more fortunate lands of the world have combined to effect this recovery. The widespread keen appreciation of the seriousness of the child-health problem promises much in the way of future improvement.

SUTHERLAND, G. A.: **Symptoms and Signs in Chronic Heart Disease.**

*British Journal of Children's Diseases*, 1922, xix, No. 1, p. 10.

In dealing with individual cases of heart disease, it is advisable to have a definite line of procedure in the examination. There are four questions to be considered:

(1) What are the symptoms complained of, and do they indicate heart disease?

(2) What are the objective signs on examination of the heart and circulation?

(3) Do the symptoms and physical signs correspond?

(4) If there are no cardiac symptoms, what is the significance and importance of the physical signs?

In answering these questions, Sutherland states the following:

(1) Fainting or faintness is not a common symptom in connection with heart disease in childhood, nor are sudden changes in facial color. These are generally due to vasomotor instability and not to cardiac disease. Pain about the chest is not cardiac in origin, unless occurring late in the disease when other signs of cardiac failure will be present. He considers as symptoms of cardiac disease: shortness of breath on exertion, disinclination to make any exertions which normal children generally indulge in, and feeling of tiredness after moderate exertion.

(2) The changes met with in heart disease of childhood may take the form of disturbances of rate, rhythm, irregularity, dilatation, hypertrophy, altered sounds or of murmurs. Two signs of serious import are: a persistent rapid rate (120-130) in association with other



signs of heart disease and an aortic diastolic murmur due to aortic regurgitation.

(3) There must be a proper and precise evaluation of the cardiac signs and symptoms. Signs predominate in children while symptoms predominate in adults.

(4) If other signs of cardiac disease are present, we may consider along with them the presence of a systolic murmur about the precordia and determine as to whether it has an origin in a damaged valve. If, however, this murmur stands by itself as the solitary evidence of a cardiac change, then Sutherland advises that it be left severely alone. No cardiac lesion is to be assessed on the physical examination of the heart alone without an estimate being made as to the functional activity of the heart.

M. B. GORDON.

WEBER, F. P.: **Case of Erythro-edema (The Pink Disease) and the Question of Acrodynia ("Epidemic Erythema").** *British Journal of Children's Diseases*, 1922, xix, 27.

A boy of  $2\frac{1}{2}$  years of age presented the following appearance: extreme redness of the cheeks and chin with a slight scaling of the skin of the cheeks, chronic offensive discharge, muco-purulent in character, from the nose and a depressed bridge of the nose. The skin of the hands tended to be swollen, red and cyanotic, the tips of some of the fingers had been lost by gangrene or ulceration and the feet, like the hands, showed a tendency to be turbid, red or livid. On each sole there was an irregularly shaped chronic ulcer. There was slight fever. The blood count did not show anything abnormal. Microscopical examination of a small piece removed from the ulcer did not present any abnormal elements. X-ray examination demonstrated a small area of imperfect calcification in the hand bones. The Wassermann reaction was negative. There was intense itching and pain. Weber thinks that the cases reported by several American observers as acrodynia or pellagra are of the same nature as the Australian erythroedemia. He gives a short résumé of the literature and advances the theory that acrodynia may be epidemic arsenical poisoning similar to the epidemic of arsenical poisoning which occurred in England in 1900 and 1901 amongst beer drinkers.

M. B. GORDON.

## SECTION ON ROENTGENOLOGY AND ELECTRO- THERAPEUTICS

WATERS, C. A., MACCREADY, P. B., AND HITCHCOCK, C. H.: **Roentgen Ray of Chronically Infected Tonsils and Adenoids.** *The American Journal of Roentgenology*, August, 1922, ix, No. 8, p. 469.

The authors undertook the roentgen-ray treatment of a series of infected and hypertrophied tonsils and adenoids for the purpose of determining (1) whether the same clinical results could be accomplished as in tonsillectomy and adenoidectomy, and (2) whether there was a persistence of the carrier state.

In the beginning of the treatment cultures were made from swabs from the nasopharynx and tonsils and the intertonsillar distance was measured. After treatment the shrinkage of the tonsils was demonstrated by an increase in the intertonsillar distance.

The treatment consisted of the exposure to 5 ma. of current through 4.5 mm. of glass and  $\frac{1}{2}$  inch layer of orthopedic felt, using 120,000 volts, a 7-inch spark, 25 cm. focal distance, for 5 minutes.

Exposures were made on Monday and Friday on two successive weeks, then a rest for 3 or 4 weeks and four exposures given again as in the initial treatments. The proper protection of the body was given by lead and rubber sheeting; the parotid gland being doubly protected by lead foil. The area of exposure (8 by 9 cm.) was just under and posterior to the angle of the jaw.

The summary and conclusions of the authors are given in full:

*"Summary.*—Eight cases treated with two courses of four radiations each are discussed from the point of view of the bacterial flora of the tonsils and pharynx. Seven were found definitely to harbor the hemolytic streptococcus. Three are regarded as incompletely studied. In 3 other cases, the hemolytic streptococcus persisted at least four weeks following the termination of treatment. Of the re-



maintaining two, one presented an approximately normal flora throughout. The other may be regarded as improved from the bacteriologic point of view, but there is no proof that this improvement is persistent.

There is no evidence that reduction in the size of hyperplastic tonsils by irradiation is accompanied by eradication of the carrier state in individuals harboring the hemolytic streptococcus in these tonsils.

*"General Conclusions.*—(1) Roentgenotherapy causes a decrease in the size of chronically infected tonsils and adenoids, particularly in the large cellular glands, and less so in the small fibrous glands.

"(2) Our experience indicates that roentgenotherapy will not cause the hemolytic streptococcus to disappear permanently from the surface of the crypts of the tonsils, but will cause a small percentage of the palpable glands at the angle of the jaw to disappear. Out of 14 cases on which we have notes, one case showed the palpable glands completely disappeared. In 3 cases the glands were barely palpable, and in 2 cases the glands on the left side disappeared, and were still palpable on the right side. In the other 8 cases the glands were unaffected.

"(3) Clinically, roentgenotherapy gives relief from symptoms, but this may be only temporary. In some cases, the objective signs of the chronically infected tonsils do not disappear after this treatment; that is, the size of the tonsils is unchanged, hemolytic streptococcus is still present, and the glands of the neck are palpable, although subjectively they are well. In the arthritis case mentioned above this improvement might be due to the tonic effect of the x-ray.

"(4) Generalized use of x-rays for treatment of chronically infected tonsils and adenoids is not advisable. Practically 100 per cent of chronic carriers of hemolytic streptococcus and diphtheria can be cured by operative removal of tonsils and adenoids. X-ray and radium treatment must be effective in an approximate percentage, and at the same time more comfortable than operation, and be associated with fewer complications.

"(5) The x-ray treatment of tonsils and adenoids is especially indicated in those cases where a surgical operation is inadvisable—such as chorea, pulmonary tuberculosis, and cardiac and renal lesions. It is our impression that the greatest field of usefulness will be in the treatment of children. Children rarely have a chronic infection of

the tonsils comparable to that of adults. Their tonsils and adenoids are very cellular and of the type that responds most readily to roentgenotherapy. Their symptoms are largely due to hypertrophy of the lymphoid tissue in the throat and nasopharynx. It is possible that when the technic is perfected, roentgen-ray or radium treatment will entirely supplant surgical measures in children."

WASSON, W. W., AND WARING, S. J.: **Further Observations and Clinical Findings in Roentgenography of the Chest.** *Journal Radiology*, 1922, iii, 1.

If we were to photograph a moving object with a camera, we must do so with a lens so fast that all motion is stopped. In a like manner in chest roentgenography, we see from calculation that the time must be  $1/10$  of a second or less. This exposure has been found to be very good.

The heart and its vessels are seen in sharp outlines so that any gross lesion may be observed. The hilus and portions of the mediastinum show any fibrous or glandular change without confluence of shadows. Study can then be made of any infiltration of hilus glands and spread of infection to the adjacent lung. The bronchi passing out from the hili are seen with sufficient clearness so that we may make a study of the bronchial walls and adjacent lymphatics and vessels. In the peribronchial thickening of tuberculosis the bronchi show that sharp fibrous outline with beading so characteristic of that disease. The sharpness of outline often indicates the degree of chronicity. In chronic bronchitis the bronchial walls are thickened, while in the purulent form, they are not only thickened, but have hazy, fuzzy outlines, indicating congestion and involvement of adjacent structures. This is also true of the bronchiectatic form with the addition of localized pockets and dilatations in the bronchial lumina. The first change observed in the small bronchioles is a broadening of the shadows with perhaps some beading scattered through its mesh. In the next stage the small beading becomes more and more confluent until we have a small patch indicating air cell congestion, and if this patch becomes sufficiently large it will give signs which may be detected by the stethoscope. This air cell congestion is pathognomonic of activity and is to the roentgenologist the same as the



râle to the internist. The earlier changes are not infallible. This description is characteristic of some chronic infection, notably tuberculosis, rather than some very acute process where a whole lobe is overwhelmed in a few hours. In an advanced case of tuberculosis, we can find similar areas where the process is just making its beginning. To make the statement that there is interweaving of the terminal bronchi is insufficient, as we may have this as an extension from the hilum in bronchiectasis.

In cardiac diseases, dust and chemical inhalation, chronic pneumonitis and tumorous growths, we have similar processes to differentiate. Here, however, the general picture will usually give the key to the diagnosis. A tolerably good picture of the lungs in suspected pulmonary disease is worth no more than a tolerably good physical examination. The greatest field of usefulness of the x-ray in the diagnosis of pleuro-pulmonary affection lies in the differentiations of borderline conditions among which stands preëminently tuberculosis. The greatest value of the revelation of early pathology by the x-ray consists in this, that it frequently confirms and establishes the tentative clinical diagnosis. In the best plates, interpretation is difficult, sometimes impossible. Poor plates, lacking definition, not large enough to include the whole chest, not made in the briefest possible time are worse than useless.

**NATIONAL TUBERCULOSIS ASSOCIATION OF MEDICAL RESEARCH: X-ray and Clinical Findings in Normal Chest of Children—6 to 10 Years.** *The Canadian Medical Association Journal*, August, 1922, xii, No. 8, p. 515.

The National Tuberculosis Association of the United States appointed a group of clinicians and roentgenologists for the purpose of endeavoring to establish the clinical and x-ray findings in the chest of a normal child up to ten years of age. The committee was composed of Drs. H. K. Paine and H. R. M. Landis of the University of Pennsylvania, Drs. Charles R. Austrian and F. H. Baetjer of Johns Hopkins University, and Drs. H. K. Dunham and K. D. Blackfan of the University of Cincinnati.

The summary of the findings of the group of clinicians has established the fact that clinically the ideal normal child is a hypothetical

impossibility. There are many deviations from the usual fixed standards in the apparently healthy child, free from symptoms, which deviations must be held as within normal physiological limits; standards of height and weight, measures of resonance and resilience of the chest must not be rigid, and the estimates of acoustic phenomena must permit of variation from the ideal. Clinical experience establishes these facts beyond peradventure and suggest the corollary that x-ray examination of the chest of such children may be expected to show comparable deviations from a fixed ideal roentgenogram.

The conclusions of the clinical division of the committee are:

“(1) The data obtained on percussion and auscultation of the lungs of normal children show wide variations from a fixed standard. These variations are usual and are considered to be within normal limits.

“(2) Inasmuch as the changes referred to are dependent often upon alterations that persist as the residue of past infections of the respiratory tract, it is obvious that a careful anemnesis, with special reference to all infections, is necessary if diagnostic errors are to be avoided. Even a history carefully taken is often unreliable, as minimal infections are soon forgotten by many and among the unintelligent classes even more significant indispositions are not readily recalled.

“(3) Failure properly to evaluate these deviations from a fixed standard will often lead to the unwarranted diagnosis of disease and to even less justifiable treatment.

“(4) With a proper appreciation of the widest variations that the normal may present from the ideal, the informed clinician is better able correctly to understand the findings of the reontgenologist, and each, coöperating with the other, is less liable to error.

“(5) D'Espine's sign as indicative of enlarged tracheo-bronchial lymph-nodes is of little value.

“(6) Recognition of and familiarity with the foregoing data are of cardinal and practical importance to every patient, potential and established. Without a proper appreciation of the facts set forth, no intelligent differentiation between a normal and an abnormal respiratory tract can be made.

“In brief, to establish the presence or absence of disease, it is imperative that all data—clinical, laboratory and roentgenographic—



must be evaluated and correlated and that no one fraction of the evidence be stressed to the exclusion of the others."

The conclusions of the x-ray division of the committee are:

*"The Normal Chest.*—The normal chest of the child from the roentgenologic standpoint is subject to such wide variations within normal limits as to be beyond the possibility of exact description.

*"Hilum Shadow.*—The conglomerate shadow commonly called the hilum shadow, when found lying entirely within the inner third or zone of the lung area can be disregarded (or regarded as normal), except where it is made up of a solid mass of homogeneous shadow giving undoubted evidence that it represents a growth or mediastinal pleurisy.

*"Calcified Nodes.*—Calcified nodes at the root of the lung, without evidence of lung disease, are of no significance except as a possible evidence of some healed inflammatory condition, possibly but not necessarily tuberculous. They are a common finding in normal chests.

*"Density and Thickness of Trunk Shadows.*—In the normal lung the bronchial trunk shadows are not visible in the extreme apical regions. For convenience of description the remainder of the lung is divided into three vertical zones, extending outward from the lateral border of the spinal shadow to the lateral chest border. The inner zone contains the root shadows. The mid zone contains the trunk shadows, gradually fading out into their final subdivisions. The peripheral zone contains radiating lines from these and fading off before the periphery is reached. Where in the mid zone or peripheral zone, these shadows do not disappear in the characteristic fashion described, the appearance may be evidence of a variety of conditions, past or present, of an inflammatory nature or otherwise. It may accompany a tuberculous process but is not necessarily indicative of tuberculosis.

*"Improper or Misleading Terms.*—The use of the terms "peribronchial tuberculosis" and "parenchyma tuberculosis" is not to be recommended in the interpretation of roentgenograms of the chest. Until corroborated by laboratory or clinical findings, the use of the terms *active* and *quiescent* should not be definitely applied to evident lesions demonstrated on plates."

NOVAK, F. J.: **The Treatment of Malignant Tumors of the Pharynx and Larynx by Diathermy.** *Illinois Medical Journal*, April, 1922, xli, 252.

Diathermy has recently been applied to the treatment of neoplasms of the mouth, pharynx and larynx, in the form of a current of low voltage, of high amperage, and extremely high frequency. The author uses a new Victor machine which produces deep penetration of tissue, without carbonization, and no muscular contraction. There is local application of sufficient heat to destroy the tumor, with inhibition of the growth of migrating cells, and the occlusion of the lymph spaces and channels. Diathermy accomplishes what actual thermocautery and surgery cannot. Also electro-coagulation is insufficient alone; it must be supplemented by radium.

*Treatment.*—The anesthetic should be preferably chloroform in the hands of an expert anesthetist. The oropharynx is easily accessible; the operation on the larynx could be through suspension laryngoscopy. The active electrode should be eight inches long, with a tip 1 cm. in diameter; depending upon the location the electrode is either straight, curved or angular. The inactive electrode is a large wet pad secured to the patient's back. The amount of current depends upon the size and location of the tumor, varying from 1000 to 1500 milliamperes; length of exposure averages 20 seconds, determined by the rate and extent of coagulation. Fractional coagulation is preferable to coagulation of the mass at one time, since it lessens the danger of hemorrhage.

*Results.*—The immediate result is the lessening of pain. The necrotic mass separates within 10 days, with a smooth hard scar in from three to six weeks. It is too soon to judge of the ultimate results.

MOORHEAD, T. G.: **An Unusual Case of Mikulicz' Disease.** *Dublin Journal of Medical Science*, January, 1922, 4th Series, p. 595.

The syndrome described first by Mikulicz in 1888, was classified by Howard in 1909, who grouped them under: (1) Mikulicz' disease proper; (2) Pseudoleukemia; and (3) Leukemia. He reported 55 cases in the first group, chiefly adults, which showed merely sym-



metric enlargement of the lacrymal glands, and later, of the salivary glands; there were no blood changes, and no general symptoms. The enlargement of the glands was due to overgrowth of the connective tissue, with infiltration of round cells; disease was of long duration, but showed little tendency to shorten life. He reported 20, in Group II, with clinical picture similar to the above, but in addition the lymphatic glands were enlarged, and sometimes the spleen; microscopically the glands showed typical Hodgkin's disease. The third group gave only 6 cases, which with enlargement of the lacrymal and salivary glands, showed a clinical and pathological picture of lymphatic leukemia.

The author's case was of the third type in a farmer 48 years of age, who had begun to suffer from enlargement of the glands all over the body, beginning with the tonsils, and gradually extending to the other glands including the lacrymal glands. It had begun three years previously. Examination showed that there was bilateral enlargement of the lacrymal glands, the parotids and other salivary glands; in fact as was shown by x-ray all the glands over the body were symmetrically enlarged, as was the spleen; the blood picture was that of lymphatic leukemia.

*Treatment.*—X-rays systematically applied to the spleen and to the various groups of glands, arsenical injections, and benzol capsules. Under this treatment the patient is showing improvement; the glands, including the parotids, are decreasing in size; the blood picture has improved.

**BOWEN, C. F.: Superficial Malignancies.** *Ohio State Medical Journal*, 1922, xviii, 60.

No one method cures all cases. Electric coagulation and fulguration, radium and x-ray, in proper combination will kill any cancer within reach.

*Selective Therapy.*—All growths projecting above normal skin is destroyed by electric coagulation, after anesthetizing with novocain, and a little adrenalin; the burned tissue is then curetted away, and the base of the ulcer thoroughly heated with electric current. Then x-ray is used to destroy cells lying deeper in the tissues. Electric coagulation is used also to expose cancerous tissue, covered by

normal epithelium. Afterward, there is formed an open ulcer. If there is much thickening and induration around the base of the ulcer, radium needles are imbedded in the tissue and left for from five to eight hours.

Some cases require all three treatments. The author has found this method very efficient. The patients are sent home, with instructions to keep the ulcer clean, and are asked to return in one month for observation. Many failed to return, but by following them up, the author learned that healing is taking place. A few cases need occasional x-ray treatment to complete the process.

KIDD, F.: **Pyelography.** *British Medical Journal*, May 13, 1922, No. 3202, p. 748.

No anaesthetic should be used in taking pyelo-radiograms as it is then possible to over distend the pelvis of the kidney, and thus damage the kidney itself. If there is the slightest over-distention of the pelvis of the kidney the patient will feel a sudden dull pain in the back or loin. It is not wise to pass ureteric catheters on both kidneys at the same sitting, and if only one is done at a time, there is seldom rigor or any constitutional upset due to the procedure. Also too large a catheter should not be employed, and one is not to judge the size of the pelvis of the kidney from the amount of urine which flows at the time of introduction of the catheter, for it may produce a reflex oliguria, or polyuria. In cases of painless hematuria, a pyelogram may reveal the tumor mass protruding into the pelvis of the kidney. In cases of suspected renal tumor, if the pyelogram shows normal, the suspected tumor is not of renal origin. In cases of pain supposed to be of renal origin, a pyelo-radiogram will show the kidney to be normal, or that the kidney is too movable or that there is a kink of the ureter. Some renal stones do not show with an ordinary radiogram and they may be shown by injecting colloidal silver into the ureter and taking two pictures, one at the time of injection and another a few minutes later, when we may be able to see the alteration of the calyx made by the stone, or some of the salt may adhere to the stone and outline it. Pyelography has established its position as a valuable method of clinical research in urology. It is indicated particularly in cases of severe abdominal pain, of doubtful origin, to determine the nature of abdominal tumors, and to complete the diagnosis in many cases of hematuria and pyuria.

L. C. JOHNSON.



LENNOX, W. G., GRAVES, R. C., AND LEVINE, S. A.: **An Electrocardiographic Study of Fifty Patients During Operation.** *Archives of Internal Medicine*, July, 1922, xxx, No. 1, p. 73.

Frequent electrocardiographic tracings were taken during operation, upon 50 patients, control tracings being taken before and after operation. Altogether, 1750 tracings were made. These tracings recorded a surprising number of abnormalities. In the first place, the heart rate was found to be very much more rapid than the anesthetist suspected in many patients. In 34 per cent of the cases the heart rate was 20 or more beats faster per minute than the highest recorded pulse rate, the discrepancy sometimes being very marked. It is suggested that for those cases in which it is important that the operator have accurate information, the rate be ascertained by means of a stethoscope strapped over the patient's precordium, with tubing attached of sufficient length to reach the anesthetist. In one case there was observed a paroxysm of auricular tachycardia, the rate rising sharply from 120 to 167. The anesthetist noted only a rise in the pulse rate to 135. There was no adverse change in the patient's condition. In 11 cases premature beats were recorded, 7 being ventricular, and 4 auricular. Three of these had been known to have shown them previously. One patient who had previously shown auricular paroxysmal tachycardia and extra systoles, and who had a 10 days' course of digitalis went through the operation without showing any abnormality. Well marked sinus arrhythmia developed in 3 cases. A somewhat delayed A-V conduction was shown in one case. There were no examples of prolongation of the Q-R-S interval. One case had shown this abnormality in the preliminary tracing but it did not increase during the operation. The patient died 8 days later from pulmonary embolism and broncho-pneumonia. There was no evidence of heart failure, but autopsy showed a patch of fibrous myocarditis 1 to 2 cm. in the wall of the left ventricle.

Dislocation of the pacemaker, as shown by changes in the shape, direction and position of the *P* wave constituted the most notable change in the series, occurring in 30 per cent of the patients. It is probable that at least some of these represented instances of nodal rhythm, but there were so many factors involved and the conditions under which they were studied were so limited, that it was not possible to be sure of this. The abnormal rhythm appeared almost ex-

clusively during the induction of anesthesia, or during the first third of the operation. This points to factors other than fatigue as a cause. An analysis of the cases showed that the incidence of the displacement of the pacemaker is greater in patients having head and neck operations, intra-pharyngeal anesthesia, or when preliminary atropin is omitted. It is possible that vagal stimulation is in some way concerned with these procedures. The occurrence of premature beats does not seem to be related to these factors. None of the patients showing abnormal electro-cardiograms gave clinical evidence during the operation of embarrassed circulation. The periods of abnormality in the mechanism of the heart beat during operation are surprisingly frequent, but seem to be transient and are of physiological, rather than clinical interest.

T. HOWARD.

WITHERBEE, W. D.: **Treatment of Focal Infection of the Throat by X-Ray Compared with Surgical Removal of Tonsils and Adenoids.** *New York Medical Journal*, March 1, 1922, cvx, No. 5, p. 263.

The x-ray method of treating chronic focal infection of the throat, tonsils and adenoids, is not only safe and permanent, but will more thoroughly and completely remove this focal infection than any other method yet devised.

The technic is simple. A seven inch spark gap is used, five milliamperes, four minutes time, ten inch distance, and 3 mm. of aluminum as filter. The patient lies face downward, head turned to the side, the position and angle of the patient and tube corresponding exactly to that employed by the roentgenologist in making a radiograph of the lower molars on an x-ray plate. Eight treatments are given at intervals of two weeks, and both sides of the head are exposed at each treatment. A special table and board have been devised for the treatment of children.

The principle of this method is as follows: Both lymphatic and embryonic tissues are more easily destroyed by the x-ray than any other living cell. The tonsil consists mainly of lymph tissue. The small fibroid tonsil so commonly associated with rheumatism contains lymph follicles, the greater part of which is embryonic tissue as evidenced by the mitotic figures. The embryonic tissue in the follicles



of the large lymph tonsil is considerably less than is found in the fibroid tonsil. The remainder of the tissue in these follicles consists of mature lymphocytes. Therefore, it is possible to use very small doses of x-ray to promote the absorption of the lymphatic element of the tonsil which will in no way interfere with any of the surrounding and adjacent cells or glands.

From the viewpoint of infection the shrinkage of the tonsil and lymph tissue of the lateral and posterior walls of the throat by x-ray will produce a drainage and relieve the distortion of the crypts throughout the entire mucous membrane which is impossible by any known operative procedure. Out of 36 cases in which specimens from the crypts were taken 32 showed an absence of hemolytic streptococcus and hemolytic staphylococcus. Recently Dr. Hickey, of Detroit, has carried out this treatment in a series of diphtheria carriers in which he was able to rid the throat of diphtheria bacilli in from two to four days and this occurred in 80 per cent of the cases treated.

This method is free from serious complications. Following surgical removal one may have lung abscess, empyema, phlebitis, endocarditis, hemorrhage, middle ear infection and mastoiditis.

The same technic is used in the treatment of tuberculous glands of the neck and toxic goiter.

The objections have been the dangers of a burn. This is impossible if the technic prescribed is carried out. The possibility of injury to the parotid, the thyroid, the pituitary, and other adjacent glands has been amply tested in the past ten years in which tuberculous glands of the neck have been treated by much larger doses, some of the patients receiving as high as forty doses, whereas the dose for tonsils and adenoids has never exceeded fourteen treatments in any given case in a series of nearly 500 cases which we have treated in the past two years.

This method is especially indicated in chronically infected throats in vocalists, since the muscular reconstruction of the throat is minimum as compared with that following surgical removal of tonsils and adenoids; also in those cases associated with rheumatism, chorea, diabetes, chronic endocarditis, hemophilia, or any condition contraindicating operation.

J. ROSE.

## SECTION ON NEUROLOGY AND PSYCHIATRY

**BRODERICK, W. F.:** **The Effect of Endocrine Derangement on the Dental Tissues.** *New York Medical Journal*, March 15, 1922, cxv, No. 6, p. 320.

So long as the enamel remains intact there can be no caries. Enamel, in health, progressively hardens as life proceeds. This hardening is due to a progressive laying down of lime salts, taken from the body store of ionic calcium. This bodily store is, in health, equivalent to the need of the individual at the time, and is preserved by the endocrine apparatus, which also is the fixer of lime salts in the teeth.

If the endocrine apparatus is thrown out of balance in the direction of calcium starvation, this reserve store is diminished, and fixation of lime salts in the teeth is interfered with. An upset in endocrine balance in childhood, youth and pregnancy will be in the direction of calcium starvation. Calcium starvation will lead to a diminished calcium index in the saliva, with a lessened alkalinity of that secretion, thus directly leading to caries.

Endocrine derangement, leading to a loss in balance towards calcium starvation, tends to cause a condition of acidosis, by lessening the alkali reserve of the body; in the compensation of this condition the calcium salts, together with other alkaline salts, are utilized for acid neutralization, and therefore not available for hypercalcifying teeth. If the acidosis be more severe, built up and fixed inorganic lime is torn away from bones and teeth to help build up this alkali reserve and thus preserves life, lowering resistance of teeth to caries.

Endocrine derangement accounts for all the conditions leading to dental caries, whether they may be diet, lack of vitamins, altered salivary secretion or what not.

J. ROSE.



REEVES, R. S.: **Clinical Studies of Lethargic Encephalitis.** *New York Medical Journal*, December 21, 1921, cxiv, No. 12, p. 792.

Lethargic encephalitis has appeared in epidemic form only when influenza has been epidemic. As yet there has been no positive identification of the causative organism. This disease is transmitted by secretions of the nasopharynx, mild and abortive cases and carriers play an important part.

Pathologically, the brain shows a marked degree of congestion and edema which may be either local or general. The brain stem is most frequently affected. Small pin point hemorrhages are seen in the medulla while secretions show a perivascular round cell infiltration. This latter is noted most often near the fissure of Sylvius and the floor of the fourth ventricle extending into the cord and into the basal ganglia.

The polymorphism of this disease gives a varied symptomatology:

- (1) Cases with general symptoms and without localizing signs.
- (2) Cases with third nerve paralysis and general disturbance in the function of the central nervous system.
- (3) Cases with facial paralysis and general disturbance in the function of the central nervous system.
- (4) Cases with spinal manifestations and general disturbance in the functional of the central nervous system.
- (5) Cases with polyneuritic manifestations and general disturbance in the central nervous system.
- (6) Cases with mild or transient manifestations (so-called abortive cases).

The symptoms are both general and localizing, including lethargy, fever, headache, body pains and coated tongue, and those referable to the cranial nerve or nerves involved. The outstanding symptoms are lethargy and a negative spinal fluid. Where the third or sixth nerve nuclei are involved ocular symptoms are prominent.

In differential diagnosis we must consider the following:

- (1) Syphilitic meningitis, where we find fluid under pressure, positive Wassermann, positive Kernig's sign, some rigidity of the muscles of the neck and a patient in a continuous stupor.
- (2) Tuberculous meningitis where there is also fluid under pressure and it contains many lymphocytes and tubercle bacilli, positive

Kernig's, some rigidity of the muscles of the neck, the tuberculous history and physical findings and the dissociation between the temperature and pulse.

(3) Anterior poliomyelitis in which the spinal fluid is cloudy, contains many polymorphonuclear and eosinophilic leucocytes and the meningococcus, positive Kernig's, stiffness of the muscles of the neck, exaggerated patellar reflexes, positive Babinski and ankle clonus.

(4) Cerebral abscess in which the eye examination showed choked disc, the leukocyte count is high, there is a marked pleocyte count and at times cloudy spinal fluid, hectic temperature, usual history of primary focus and projectile vomiting.

(5) Brain tumor in which there is a history of slow onset with headache and vomiting.

The treatment is symptomatic. Absolute quiet, light nourishing food given at frequent intervals, good nursing and hydrotherapy are fundamentals. Lumbar puncture as a therapeutic measure in cases where the meningeal symptoms are marked is very effective. Urotropin in ten grain doses three times daily does not appear to justify its use.

The protein character of the symptoms makes the diagnosis in the atypical cases very difficult.

The four most prominent symptoms are eye conditions, lethargy, fever, and atypical spinal fluid.

The filterable virus has a selective action on the brain stem.

Definite symptoms of cerebral disturbance are seen in patients one year after the disease.

J. ROSE.

HARROWER, R. H.: *Anaphylaxis and the Endocrines*. *New York Medical Journal*, March 15, 1922, cxv, No. 6, p. 349.

Protein metabolism is related to the internal secretions; hence, disturbances in the routine of protein metabolism may be connected with a disturbed endocrine function.

Anaphylaxis, or protein sensitization, may involve the endocrine glands, and a part of the reaction connected with these idiosyncrasies may involve the ductless glands.

Hypoadrenia of anaphylactic origin needs to be treated like ad-



renal insufficiency of any other toxic origin. Occasionally, protein sensitization may be overcome by the establishment of an immunity, as is routinely done in the treatment of hydrophobia or the administration of bacterial vaccines. In vomiting of pregnancy, placenta substance administered over a period seems to favor an immunity to the placental proteins and a control of toxic irritability.

Occasionally, organotherapeutic measures bring about an anaphylactic reaction, particularly in patients already sensitive to other food proteins.

Whenever a clinical hint attracts attention to protein sensitization, the endocrines should be studied and brought into the matter both from the viewpoint of diagnosis as well as treatment.

J. ROSE.

MOORE, J. E.: **Studies in Asymptomatic Neurosyphilis.** *Bulletin of the Johns Hopkins Hospital*, July, 1922, p. 231.

It has been shown that early invasion of the central nervous system in syphilis, is common, occurring in 26.4 per cent of a series of 352 patients with primary and secondary syphilis. Of 94 early neurosyphilitics 72 were asymptomatic, and were detected only by the routine application of spinal puncture. Early asymptomatic neurosyphilis may be divided into three subgroups on the basis of the spinal fluid findings and the response of the various group to treatment.

Invasion of the central nervous system probably occurs in the majority of all patients with syphilis, and unless the disease is influenced by treatment, this invasion takes place in most instances within the first year after infection. Early asymptomatic neurosyphilis is more common in the white race than in negroes, but is equally frequent in men and women of either or both races.

Prolonged regular treatment influences favorably the incidence of early asymptomatic neurosyphilis. Irregular or lapsing treatment markedly increases its incidence. There is no support to the theory that neurotropic strains of the *Treponema pallidum* organism exist. That the spinal fluid abnormalities of early asymptomatic neurosyphilis are evidence of actual anatomical damage to the nervous system, is indicated by the frequency of certain minor subjective and ob-

jective neurologic signs in this class of patients. An appreciation of these signs, and of the significance of a persistently positive blood Wassermann reaction in treated patients, furnishes a clinical diagnostic aid for the recognition of neurologic invasion. Spinal puncture is an indispensable routine procedure in the management of early syphilis. Unless it is employed, many patients will be discharged as cured who are candidates for neurosyphilis.

DE F. LAYTON.

WRIGHT, S.: **Adrenal Insufficiency.** *British Lancet*, July 1, 1922, cciii, No. 5157, p. 14.

The French in particular have studied this condition. The main functions of the adrenals are to maintain cardiovascular tone and neutralize toxins. Sergent claims that his white line is a pathognomonic sign of adrenal insufficiency. The patient is placed in the recumbent position for some minutes and then geometrical figures are traced on the abdomen with a dull object carefully avoiding scratching of the skin. The white line appears after a definite latent period, and lasts about one minute. It appears gradually and fades slowly and at no time is accompanied by any red lines. One hundred normal individuals were studied. Twenty-seven cases gave a marked white line, 39 less definite and 34 negative. Some patients with a high blood-pressure gave positive lines and others with a low blood-pressure responded negatively.

In 1913, L. R. Muller, made some studies on dermographia and described a white line in tabes, disseminated sclerosis and myelitis. The author's experiments coupled with those of others do not bear out Sergent's assertion that the white line is pathognomonic of adrenal insufficiency.

H. JOACHIM.

PAILLARD, H.: **Old and New Theories Concerning Migraine** (Apropos des theories anciennes et nouvelles sur la migraine). *Journal medical Francais*, 1922, xi, 129-132.

This article deals with the pathogenic rôle played in migraine by the nervous system, the endocrine glands, and digestive troubles.



Léopold-Lévi and H. de Rothschild have mentioned a series of cases in which they observed attacks of migraine in slightly hypothyroidal patients, attacks which were very plainly ameliorated or cured by thyroid opotherapy; in several cases it was an old migraine and the result was the more remarkable. They were not alone in such findings, since Consiglio observed a marked improvement in a case of ophthalmic migraine thyroid treatment. Apert also reported a favorable case.

Migraine can coëxist as well with Basedow's disease as with thyroid insufficiency; quite a few cases have been mentioned; among them that of Jacobsohn in which there had developed in the same patient attacks of left-sided migraine at 20 years, a paralysis of the left cervical sympathetic at eight years, a Basedowian syndrome quite recently. The migraine had lately disappeared from the left side and had developed on the right side.

Levi and Rothschild have also brought to light the influence of the ovarian function on migraines. The appearance of a pregnancy usually suppresses migraine in women who are subjects to it, probably on account of the hyperfunction of the ovary which exists during the pregnant state. But migraines may reappear (or even make their first a pregnancy, when the condition of ovarian hyperfunction has disappeared. Menstruation is often the occasional cause of migrainous attacks. Ovarian opotherapy sometimes improve migraines.

**SICARD AND LEMOYEZ, J.:** **Hemoclastic Tabetic Pain Crises. Their Treatment by Adrenalin** (Crises algiques tabétiques hemoclastiques). *Bulletin et Memoires de la Societe medicale des Hopitaux de Paris*, 1922, xxxviii, 797-801.

The pains of tabetics are variable; there are variations of localization, tonality, intensity, duration, recrudescence, recurrence, etc. These modalities are conditioned, at least some of them, by the unequal distribution, more or less preponderant, of tabetic lesions, on some one or other sensitive region of the nervous systems, ganglions, roots, posterior cords, sympathetic. But it is surprising that fixed histological lesions should correspond with transitory painful symptoms, attacks, paroxysmal crises, crises of fulminating pain of the lower limbs, visceral, gastric, laryngeal and vesical crises. To ex-

plain this painful evolution by crises, the authors suggest a humoral in citation of pain, of the hemoclastic variety. It is a current opinion that tabetic pains are provoked or reawakened by meteorological condition, changes of temperature and hygrometric variants, by dietary errors, the intemperate use of alcoholic drinks; one tabetic patient is known to the authors, who, on the occasion of ingestion of dishes spiced with Cayenne pepper or a very small amount of champagne is attacked, almost surely, with a slight urticaria, and soon afterwards with severe fulminating pains in the lower limbs. It is also a classical notion that novo-arsenical or mercurial treatments frequently provoke a reawakening of the pain in tabetics, which becomes less with the repetition of the injections, the reactional crises being stronger when the injections are made intravenously. The intravenous injection of saline (NaCl) water, or sodium bicarbonate water produces in certain tabetics, identical pains.

One of the patients invariably suffered from his crises of fulminating pains after an intravenous injection of sodium carbonate, undertaken as treatment for his varicose veins. The crises is produced under these conditions, generally from three to eight or ten hours after the intravenous injection, sooner when there is a nitritoid crisis, post-novarsenical, for example. The pains then follow close on the congestive facial attack. Might one not explain the intimate pathogenic mechanism of these crises by the humoral—or vasomotor modifications—early or late as determined by the substance injected, of the vascular and blood equilibrium?

Vasomotor shock is one of the principal elements of Widal's hemoclasia. And, whether under the direct influence of the mechanical disturbance of the vascularization of a medullary parenchyma already injured or under the indirect influence through the intermediary sheaths of the cephalo-rachidian liquid, faithful satellites of the blood capillaries of the nervous tissue, is it not national to suppose that the root-cord irritation, thus created, will provoke attacks of pain? Some practical deductions corroborate these hypotheses.

Thus the utilization of adrenalin as anti-shock medication has given remarkable results in the painful crises of tabetics, especially in the gastric crises. In three tabetics, presenting gastric crises, when all the usual medical therapy had remained inefficacious, even subcutaneous injections of morphin and large doses of sedol, the injection of a demi-milligram of adrenalin in 10 c. c. of artificial serum,



given slowly by the intravenous route, has been followed after a lapse of a half hour to two hours, by a total or almost total cessation of pain. The injection, following the indication can be repeated, after an interval of some hours, with an equal or smaller dose, or the next day with the same dose.

The authors have even been able to use the standard of 1 mg. per injection without any inconvenience. Detailed observations will be published later as well as the fruitless trials of intravenous calcium chlorid in these cases.

Adrenalin, by intravenous injection brings a therapeutic action much superior to that obtained by the subcutaneous or gastric dose. However, in a dose of from 20 to 30 drops to the thousand, it plays an important sedative rôle in the cure of fulminating pains.

In the discussion which followed Pinard said that in the beginning of arsenobenzol treatments the pains increase and then disappear completely with sufficiently intensive and prolonged treatments and that this can hardly be explained by a hemoclastic crises, but rather by phenomena of reactivation. M. Miliace said that hemoclastic shock could hardly be blamed for crises which may be provoked by changes of the weather. The recrudescences of pain by treatment are of the order of the Herxheimer reaction, as they are provoked by mercurialunctions, intramuscular injections of gray oil as by intravenous injections of 914. Their coming may be prevented by giving the patient preliminary sufficient doses of pyramidon. They may be made to disappear by the repetition and augmentation of the doses, that is to say by curing the syphilitic process, which demonstrates their production under the influence of the shock designated as the Herxheimer reaction. There is at present an abuse of anaphylaxis and colloidoclasia.

# INTERNATIONAL MEDICAL DIGEST

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# INTERNATIONAL MEDICAL DIGEST

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No. 10

## SECTION ON GENERAL MEDICINE

PORTMANN, G.: **Diagnosis of Late Hereditary Syphilis and Lupus in Otorhinolaryngology.** *New York Medical Journal*, May 3, 1922, cxv, No. 9, p. 508.

The diagnosis of late hereditary syphilis and of lupus tuberculosis is often extremely difficult, even with the help of the laboratory. Hybrid cases of syphilis and tuberculosis are most rare for out of 50,000 observations in the course of fifteen years (1900-1915) at the otorhinolaryngological department of the University of Bordeaux, only 5 cases are found to be diagnosticated serofulate de vérole. But in 4 cases followed since that time and which clinically seemed to be luposyphilitic hybrids, thorough laboratory researches have shown that one case was tuberculosis of a lupic form, and the other 3 cases proved to be late hereditary syphilis. Therefore one must insist on the importance of establishing an accurate diagnosis to avoid the disasters of inopportune therapeutics (noxious influence of a bioid treatment in some tuberculous lesions, for instance).

J. ROSE.

COHEN, S.: **The Tonsils.** *New York Medical Journal*, May 17, 1922, cxv, No. 10, p. 608.

The tonsils should be removed when there is a history of frequent attacks of tonsillitis. A history of even one attack of quinsy requires the removal of the tonsils. Whenever the tonsils are so large as to obstruct breathing, or impair voice or speech, the so-called ob-



structive tonsil removal is indicated. If one attack of tonsillitis is followed by some general disturbance, such as rheumatism, cardiac trouble, or arthritis, etc., early removal is advisable. Embedded tonsils, especially those pushing the soft palate upward and so interfering with Eustachian drainage, the removal of the tonsils should seriously be considered.

In any generalized chronic ailment, when the tonsils look suspicious, with some enlargement of the glands of the neck, and other possible sources of infection, such as the teeth and sinuses, can be ruled out, remove the tonsils. In ear conditions, such as chronic otorrhea, pains referred to the ear, even without any appreciable change in the drum-head, are often due to Eustachian blockage by the tonsils or adenoids, and their removal should be seriously considered. Some specialists advise a tonsilloadenoidectomy if the ear discharges longer than three weeks.

Enlarged glands, especially when tuberculous, should have the most probable portal of infection removed, therefore do a tonsillectomy. In some cases of keratosis tonsillaris, when the horny material is limited to the tonsils only, their removal is the quickest cure of the condition.

J. ROSE.

McDOWELL, J. E.: **Keratosis Blenorrhagica or Gonorrheal Keratosis.**  
*New York Medical Journal*, May 3, 1922, cxv, No. 9, p. 518.

Keratosis blenorrhagica is practically always associated with gonorrheal arthritis. There are a few cases reported without joint involvement. Characteristic lesions vary in size from a pea to larger waxy nodules, discreet and comparatively few in number. They begin as small conical protuberances, hard to the touch like corn, and are painless.

The French speak of these lesions as dry blisters, or dry hyperkeratotic pyoderma. These crusts become brownish in color as the case progresses, resembling rupia. Under treatment, or with improvement of the gonorrheal infection, they wither and drop off, leaving a pink base with no infiltration or permanent scarring, thus differing from the syphilides.

Often the toes, especially on the plantar surface, present a condition simulating chilblain, the skin is tender, with distinct swelling,

later becoming dry and crusted, extending down the soles of the feet.

There may be a general plantar keratosis. Debility, cachexia, long standing local infection, or virulent systemic infection by the gonococcus is the causative factor in this epidermal manifestation. Pathology and histology is far from satisfactory; hypertrophy of the epidermis, with edema and infiltration of leukocytes, increased plasma, and round cells. It is a parakeratosis, and not a true keratosis. Small sections of tissue from the skin lesions and epitrochlear glands were inoculated in various culture media. Smears and cultures from the serum of succulent lesions are all negative. Wadrack, in 1917, demonstrated in his case a few gram negative diplococci closely resembling the gonococcus. All other cases were negative to bacteriological findings.

The treatment used was McDonagh's colloidal therapy, consisting of such agents as manganese, antimony and colloidal sulphur which is known as intramin.

J. ROSE.

THURSFIELD, H., AND PATERSON, D. H.: **Dermato-polyneuritis (Acro-dynia Erythroedema)**. *British Journal of Children's Diseases*, 1922, xix, 27.

A previously healthy girl of 10½ months is suddenly attacked by an undiagnosed, probably febrile condition. After some weeks of ailing, fretfulness and anorexia, she developed marked skin, neuromuscular and mental symptoms, resembling in many respects, conditions seen in epidemic encephalitis. There was desquamation of the hands and feet with a redness and swelling of the extremities and a singularly offensive mouse-like odor. Later the face showed two patches of color on the cheeks, reddened nose and a branny desquamation on the forehead. The extremities were cold and cyanosed and slightly edematous below the wrists and ankles, with a peeling of the skin in large flakes from the fingers and toes. The muscles showed a hypotonia with retention of the reflexes. The mentality was altered. The condition seemed stationary or else slowly progressive. The child, however, died later of acute intussusception. The post mortem examination failed to reveal anything abnormal. The authors consider the condition from which the child was suffering to have



been a deficiency disease or a post-influenzal polyneuritis as the mother had influenza ten days prior to the onset of the child's illness.

M. B. GORDON.

**HINES, L. E.: The Bacteriology of the Skin Lesions in Smallpox.**

*Journal of Infectious Diseases*, August, 1922, xxxi, No. 2, p. 89.

Hemolytic streptococci occurred in the pustules of smallpox in 3, and non-hemolytic, in 2, of 20 cases. Staphylococci were found in 7 cases. Death took place in 3 cases, and streptococci were found in the skin lesions of all 3. The agglutinin test indicated that the hemolytic streptococci found in the skin lesions belonged to different groups.

M. M. BANOWITCH.

**HAMILTON, B. E., AND HALLISEY, J. E.: Brief Analysis of 500 Cases Referred to the Boston City Hospital Out-patient Heart Clinic.**

*Boston Medical and Surgical Journal*, July 17, 1922, clxxxvii, No. 4, p. 139.

Following is the grouping of these cases by diagnosis:

Rheumatic Heart Disease .....	202
Potential Rheumatic Heart Disease .....	45
Arteriosclerotic Heart Disease .....	26
Cardiovascular Syphilis .....	26
Congenital Heart (or Suspected) .....	19
No Heart Disease .....	69
Neurasthenia with Cardiovascular Symptoms, ..	40
Heart Changes with Hypertension .....	19
Miscellaneous .....	54
	<hr/>
	500

From a brief study of 500 unselected cases, it appears that:

(1) Rheumatic heart disease is extraordinarily fatal, at any rate, among children and adolescents. This series suggests that the great majority of adolescents with rheumatic heart disease have an expectation of life of less than a decade.

(2) Forty-nine of 202 unselected rheumatic heart disease cases, under careful observation show, more or less strong evidence of an active infectious process of the heart. Activity of rheumatic heart disease is easily overlooked.

(3) Approximately 15 per cent of cases referred to a general heart clinic have neuresthanias with symptoms suggesting heart disease. These cases have been diagnosed wrongly as cases of true heart disease.

M. M. BANOWITCH.

FELDMAN, S.: **Transmissibility of Syphilis in the Latent Stage and Insufficient Treatment of Early Syphilis.** *New York Medical Journal*, May 3, 1922, cxv, No. 9, p. 512.

A secondary eruption may recur in cases that have not received sufficient treatment. A fresh systemic invasion may take place not only in cases where the secondary eruption has been suppressed by a subcurative course of treatment, but also in cases where the subcurative treatment has been started after the appearance of the secondary eruption. In this case the second eruption is called a recurrent secondary.

A latent syphilitic may infect others. A case is reported which was symptomless for seven years. A negative Wassermann reaction in an asymptomatic patient in the presence of a syphilitic history means nothing. A negative reaction in a syphilitic may and frequently does revert to the positive after a certain amount of treatment.

It corroborates the law of Profeta, insofar that a syphilitic mother may give birth to asymptomatic children, but no conclusions can be drawn as to whether a syphilitic mother can give birth to nonsyphilitic children.

J. ROSE.

STOLL, H. F.: **The Value of Basal Metabolism Determinations in the Diagnosis and Treatment of Hyperthyroidism.** *Boston Medical and Surgical Journal*, July 17, 1922, clxxxvii, No. 4, p. 127.

As deviations from the normal in basal metabolic rates are not always dependent upon disease of the thyroid, a very careful history, and pains-taking examination should always precede the basal met-



abolic determination. The clinical study, if sufficiently thorough will suffice to make the diagnosis in many cases. There are borderline cases, however, where the metabolic rate will prove very helpful. In conjunction with the usual clinical signs of toxicity, the basal metabolic rate assists materially in deciding what form of therapy is most advisable. As changes in the metabolic rate frequently precede changes in the clinical picture, metabolism determinations at stated periods afford a valuable means of checking any therapeutic measure, whether, medical or surgical.

M. M. BANOWITCH.

CHRISTIAN, H.: *Digitalis in Cardiac Disease*. *Boston Medical and Surgical Journal*, July 13, 1922, clxxxvii, No. 2, p. 47.

The dangers in toxic effects of digitalis are more serious as met with in medical books, than in medical practice. Some of these toxic effects really should be sought rather than avoided in digitalis therapy.

The real dangers in digitalis therapy are three: (a) Using a poor digitalis preparation; (b) consciously or unconsciously prescribing too little of a potent digitalis preparation; and (c) not knowing when digitalis should be started and stopped. Digitalis usually is given in too small doses, and he has yet to see the patient in whom too much digitalis has been given before he has seen a patient. The large majority of cases seen by the author have had too little digitalis, a small percentage have had enough, none have had too much. Some have had too little from a standpoint of dosage when actually they should have had none. Digitalis poisoning is possible, but one of the rarities of medicine.

Digitalis is good for the symptoms and physical signs a patient has, provided these symptoms and signs are the result of cardiac insufficiency. The indications in starting digitalis therapy are the presence of signs and symptoms which are the result of cardiac insufficiency. These are, breathlessness, cough, cyanosis, edema, pain, weakness, nausea, vomiting, enlargement of the liver, decreased urine output, and rapid pulse. The indications for stopping digitalis are improvement in these symptoms and signs, or the occurrence of the toxic effects of digitalis. The toxic effects are, nausea, vomiting, certain arrhythmias, as bigeminal pulse, and heart block, rarely diarrhea.

There are a number of misconceptions about digitalis therapy, now in vogue, and some of these are:

(a) That a regular pulse indicates that a poor digitalis effect will be obtained.

(b) That striking digitalis effects are confined to those with auricular fibrillation.

(c) That a slow pulse indicates that a poor digitalis effect will be obtained.

(d) That a fast pulse is an indication for the use of digitalis.

(e) That a murmur is an indication for the use of digitalis.

(f) That cardiac enlargement is an indication for digitalis.

(g) That aortic insufficiency is a contraindication for digitalis.

(h) That myocardial degeneration is a contraindication for digitalis.

(i) That high blood-pressure is a contraindication for digitalis.

(j) That arteriosclerosis is a contraindication for digitalis.

(k) That angina pectoris is a contraindication for digitalis.

(l) That nausea and vomiting are due to some undesirable constituents in the digitalis preparation that may be removed by pharmaceutical art.

A serious error is to regard a drop as a minim, and to prescribe 15 drops of tincture of digitalis, thinking to give 15 minims. The patient taking 15 drops, often gets but 5 minims, rarely more than seven with small doses. This error accounts for much unconscious prescribing of too small doses. The rest comes from the digitalis being of low potency. Before giving digitalis there should be definite evidence of cardiac insufficiency. Increased heart rate alone is not the result of cardiac insufficiency, and never the indication for digitalis therapy. The author sees no advantage in the routine use of digitalis in pneumonia. A pneumonia, doing badly, with a rapid, weak pulse, has never been helped by digitalis, but if auricular fibrillation develops, or cardiac decompensation is present, digitalis is very useful.

Digitalis may be given in a single massive dose or in a modified massive dose method, or in regularly repeated small doses. Any of these methods is effective. The chief difference lies in the length of time needed to produce the result. For the average cardiac case there is no real preference. In a very few severe cases the modified massive dose method is better. Occasionally the single massive dose



method may be life-saving. When all is done and said, digitalis therapy is very simple. Just give enough of a potent leaf, prepared in any way, by any accepted method of dosage, and the result is most satisfactory in almost every case.

M. M. BANOWITCH.

GROVE, W. R., AND VINES, H. W. C.: **Calcium Deficiencies: Their Treatment by Parathyroid.** *British Medical Journal*, May 20, 1922, No. 3203, p. 791.

In a previous paper evidence was brought forward that calcium is present in the blood of a normal individual in two forms, ionized, and combined. When coagulation of the blood occurs, all of the calcium is found to be in the ionized form. In varicose ulcer, some of the calcium was found to be in the combined form, and when the amount of ionized calcium in the blood was increased by injection of ionized calcium salts, it was observed that healing and the rise of ionized calcium in the blood nearly paralleled. This result was not obtained when the salts were given by mouth, and complete healing of the ulcer did not occur until parathyroid also was administered. The basis of this report, is that the majority of chronic diseases in medicine are due to protracted absorption of toxic substances from a septic focus, that such absorption is accompanied by a decrease in the ionic calcium of the blood, and that the parathyroid glands are the regulators of calcium metabolism. Ulcer of the bowel tract, gumma, nasal infections, chronic tonsillitis, herpes zoster, sciatica, arteriosclerosis, acute and chronic arthritis, and even hypertrophy of the prostate, showed deficiency of ionic calcium in the blood, and when treated and this figure returned to normal, there was cure or improvement in the condition of the patient. It would seem as though the parathyroids might have a double function: first, a regulation of calcium metabolism, and second the power to render certain toxins non-toxic. This action is taken to be purely physiological in nature, placing the tissues under conditions more suitable for the performance of their normal functions, and for combatting the effects of toxic processes. In treatment, usually 1/10 of a grain of parathyroid preparation, (Parke Davis & Co.) is given night and morning, for the first 4 to 6 days, and subsequently a single dose daily, which may be continued for considerable time, without any symptoms

of over dosage. In early treatment, an exacerbation of the septic process responsible for the patient's general condition, is usual; a purulent discharge may increase in amount, or be present where it was absent before treatment; a chronic appendix may become acute and require operation; frequently a tooth may start to ache. In 3 cases there appeared an attack of erythema of the face, very like erysipelas, and in 3 others, a marked sepsis of the teeth appeared. This increase of suppuration at the site of a focus of infection, suggests very strongly that the parathyroid given by mouth is producing a stimulation of the natural defensive mechanisms of the body, acting physiologically, and not specifically upon the invading organism. The parathyroid therapy brings about a normal calcium balance in the blood, much more effectively than the injection of calcium salts.

L. C. JOHNSON.

MOON, R. O.: **Cardiac Disease and Occupation.** *British Medical Journal*, May 20, 1922, No. 3203, p. 795.

In a rough sort of way we may think of any given cardiac lesion as of a static or dynamic type, in the first case, the condition being comparatively stationary, and in the other, the tendency is to progress. Cases of the first type are likely to be due to severe infections which occurred early in life, while the latter are frequently found in arteriosclerosis and syphilis. Clearly very different occupations will be adopted for each, and only for the static ones can much work or activity be permitted. As a rule, all sorts of work which involve sudden spurts, even with long periods of rest between, are bad for most cardiac patients. In selecting an occupation it is especially important that the hours be regular, and the work more or less the same hour by hour, from day to day. This question of regularity of work is quite as important as the number of foot-pounds of work required to be put forth. Most forms of aortic disease seem to be very unfavorably influenced by work which involves even a moderate strain on the arms, such as carpentering, and this is particularly true where attacks of angina are suspected. Also since those with aortic disease are subject to attacks of giddiness, they should not engage in work which requires their going up ladders, or brings them into contact with machinery. So also an occupation should not require ever any "heavy lifting". One should consider also the distance a man lives



from his work, or if he must be subjected to anxiety or hurry to catch trains or omnibusses; or if there is a heavy uphill grind at the end of the day; or if he must after he arrives at his quarters toil up several flights of stairs. It is, however, a mistake to think that cardiac cases can do only sedentary work. The most important thing to do is to make some estimate of the power of the myocardium, and a study of his reaction to exercise is of greatest importance in making this estimation. Also an individual may have acquired the ability to do a larger amount of work than one might think right or possible, because he has learned to accomplish a great deal with a minimum of exertion. Men suffering with cardiac disease who can be up and about are far too readily sent off to some convalescent home, and some suitable occupation near their home is very much more desirable. It is quite as possible for hearts to be underworked as well as overworked, and convalescent homes should be primarily for women and children.

L. C. JOHNSON.

HEAD, H.: **The Diagnosis of Hysteria.** *British Medical Journal*, May 27, 1922, No. 3204, p. 827.

There is one series of phenomena where a knowledge of morbid psychology is of profound importance, for no branch of medicine is free from the puzzling manifestations of hysteria. It might be defined as a morbid mental state, accompanied by physical manifestations and certain forms of aberrant conduct. Disorders of speech are common, and it is not the physiological mechanics of language that are affected, but the patient is imbued firmly with the idea that he cannot speak. Although he may only whisper, he can cough loudly, and he can read or write, or comprehend what is said, which would be impossible with a higher organic lesion. A tremor of hysterical origin, ceases if the patient is made to perform some other movement with the same limb. Many are the forms of spasm which are liable to appear. If a person cannot move a leg, for instance, or is unable to walk, when lying down he may be able to kick into the air, or he will press it down to the bed if he is asked to raise it. Pain or oversensitiveness to manipulation is a common event, and the tender spots which may occur on the body tend to react in a peculiar manner. A patient hypersensitive in the lower right abdominal quadrant may be

as sensitive when a piece of cotton wool touches this area as when a pin is drawn across the surface, and the touch of any hypersensitive area with cotton is not potentially painful. It is the position of the tender spot which dominates his consciousness, and not the physiological nature of the stimulus. The seizures and convulsions which may occur in hysteria are essentially emotional outbursts, and in "fugues" which are commonly attributed to amnesia, there is doubt if memory of all acts is lost. These manifestations are all positive in nature, and there is nothing negative about them. They depend upon three mental factors; proneness to auto-suggestion, a negative attitude to orders from without, and a tendency to the state known as "dissociation". This state of mind is essentially an irrational answer to a conflict. A soldier, suffering from fear and knowing that he cannot run away, finds a perfect and honorable solution in hysterical paraplegia. In many cases the underlying cause is more subtle and have to do with unresolved emotions or repression. Fear is the most potent reason for repression, and an important element in the production of conversion hysteria is a want of capacity to meet failure. In treatment, the patient should be removed from the usual surroundings, and an attempt made to switch the dissociated part into the continuity of the patients mental life. Never bully or accuse him of dishonesty. The firm diplomatist often produces miraculous cures.

L. C. JOHNSON.

HUTCHISON, R.: **Case of Aneurysm of Ductus Arteriosus.** *British Journal of Children's Diseases*, 1922, xix, p. 86.

A girl 6 years old, died from a sudden and profuse hemoptysis. There was a history of measles followed by diphtheria five months previously and six weeks later she suffered from "pleurisy" and had not been well since. She complained of pain in the chest with fever and cough. There was no clubbing or cyanosis. On examination the apex beat was diffuse, felt in the fifth to sixth interspace just outside the nipple line; a soft systolic murmur was heard at the apex and over the sternum. There was dulness in the left intraclavicular and suprascapular regions with diminution of the breath sounds and some crepitation over the right apex in front. The dulness over the left apex became more pronounced and the apex murmur disappeared



as the case progressed. Post mortem examination showed an aneurysm adherent to the upper lobe of the left lung and eroding it to the depth of one centimeter. The absence of the characteristic murmur, in the opinion of Hutchison, can be accounted for by the fact that the pulmonary end of the ductus was closed. He is unable to say whether or not the development of the aneurysm was caused by inflammatory disease of the wall of the ductus supervening upon the infection of the lungs.

M. B. GORDON.

MEANS, J. H.: *The Use and Abuse of Thyroid.* *Boston Medical and Surgical Journal*, August, 3 1922, clxxxvii, No. 5, p. 164.

The authors conclusions are:

(1) That in thyroid we have a highly active drug. The conspicuous feature of its action is the increasing of the rate of combustion within the body, and the production of symptoms associated therewith.

(2) That certain clinical conditions exist in which a low metabolic rate is undoubtedly due to under action of the thyroid. That in such, the administration of thyroid, relieves all symptoms. That certain types of non-toxic goiter may be included in this group.

(3) That in conditions other than hypothyroidism conclusive indications for the use of thyroid have not yet been found.

(4) In normal persons, the ingestion of thyroid produces unpleasant if not harmful symptoms. In obese persons it does the same. In simple obesity there probably is no element of hypothyroidism. The use of thyroid in the routine care of obesity, would therefore be unwarranted. An exception may be made when thyroid therapy is coupled with partial starvation.

(5) Whenever thyroid is used in conditions other than hypothyroidism, in obesity, for example, or empirically in other conditions, it should be used with the greatest caution. The physician should have a full understanding of its action, and of the harm it may do, and have his patient under careful observation, so that the drug may be stopped at once, if ill effects arise.

(6) Self dosing with thyroid by the laity is highly undesirable. The profession should do its utmost to discourage this practice.

M. M. BANOWITCH.

BOYNTON, F. J., THURSFIELD, H., AND PATERSON, D.: **The Severe Blood Diseases in Childhood: A Series of Observation from the Hospital for Sick Children.** *British Journal of Children's Diseases*, 1922, xix, p. 81.

Anemia is defined as the failure of the blood-forming tissues to maintain the normal supply of corpuscles and of hemoglobin to the rest of the body and the gauge of its severity is measured by the failure of the capillary blood to reach certain normal standards in respect of numbers of corpuscles and amount of hemoglobin. The anemias are classified as follows:

- (A) Congenital anemia
  - (1) Acholuric anemia.
  - (2) Polycythemia.
- (B) Severe anemias
  - (1) Anemia Gravis.
  - (2) Von Jaksch's Anemia.
- (C) Leukemia.
- (D) Simple anemia.
  - Chlorotic type
- (E) Lymphadenoma.
- (F) Purpura.

Acholuric jaundice is the only type of anemia which can fairly be called congenital; there is congenital fragility of the red corpuscles, they are well formed, do not show any abnormality in morphology, but are more easily dissolved than the normal. The symptomatology is characterized by paroxysmal attacks of anemia and jaundice accompanied by an enlarged spleen, the size of the latter varying with the severity of the other two symptoms.

Anemia gravis is a condition of uncertain symptomatology and is also called aplastic anemia, a term which the authors deem undesirable because in many severe anemias there is an aplastic stage and because in some instances, so-called aplastic anemia could not be considered aplastic in type, since there is evidence of bone-marrow activity. The symptoms may simulate leukemia, purpura, secondary anemia or idiopathic pernicious anemia. The condition is probably secondary to some blood poison, infective or otherwise.

The known association of the blood platelets with processes of coagulation, the marked diminution of their number in such diseases



as purpura hemorrhagica and the experimental work all seem to point to a strictly limited function for the platelets in connection with the escape of the formed elements of the blood from their containing vessels. There does not appear anything to suggest that, except in this respect, the platelets are concerned either in the production or the cure of anemia.

M. B. GORDON.

LAHEY, F. H.: **Parathyroid Deficiency and Its Treatment.** *Boston Medical and Surgical Journal*, August 3, 1922, clxxxvii, No. 5, p. 170.

Tetany undoubtedly follows complete removal of the parathyroids. It occurs in 2 forms, mild and transitory, or severe and fatal. Parathyroid pathology has not been demonstrated in the other diseases characterized by calcium deficiencies or tetanic seizures. Surgical tetany therefore, is the only disease which may now be attributed to parathyroid deficiency. Clinically and chemically it stimulates other diseases, which are apparently the result of disturbances in the acid base balance. With the appearance of its symptoms there is a definite increase in alkaline balance, a decrease in the acid balance, and a disappearance of symptoms when this balance is restored by the administration of calcium in some form. Calcium therefore, by mouth, in the form of calcium lactate and by vein in the form of calcium chlorid or calcium lactate is the most effective form of treatment. In transitory cases, it will undoubtedly ride patients over the attacks. In the severe form, it perhaps prolongs life, but death probably eventually results. It is doubtful if the average commercial parathyroid extract is of value in surgical tetany and it is quite certain that it is of no value elsewhere.

M. M. BANOWITCH.

PATERSON, M.: **Night Sweats.** *Lancet*, July 29, 1922, cc, iii, No. 5161, p. 225.

The author suggests the name slumber sweats as they occur whenever the patient is asleep irrespective of the time of day. Brunton was of the opinion that night sweats occurred from exhaustion of the respiratory center with an accumulation of  $\text{CO}_2$  which in turn stim-

ulated the respiratory center. It was formerly supposed that night sweats were pathognomonic of tuberculosis. They also occur in Malta fever and rickets. These sweats may be an early manifestation of pulmonary tuberculosis. Not much significance is usually attached to them because of their short duration. In advanced cases they do not persist but usually disappear about 3 weeks before the fatal issue. The author is of the opinion that the sweats are due to antibody formation. In the terminal stages the latter are not produced and hence the cessation of the sweats. The contact of the body with a mattress is a predisposing factor which can be eliminated by the addition of grass mats or canvas.

H. JOACHIM.

WILLIAMS, L.: **The Interstitial Gland.** *British Medical Journal*, May 27, 1922, No. 3204, p. 833.

It has become a matter of common knowledge that the testes in the male, and the ovaries in the female supplied some element to the economy which not only determined, but served to maintain, what we call maleness in the one and femaleness in the other. It has been shown beyond doubt that this hormone is secreted by what is known as the interstitial gland, which in man, is a mass of minute structures, not unlike fatty globules situated in the connective tissue of the testicle, separate from and unconnected with the vesicule seminales and vas deferens. The ovary also contains an interstitial gland. In the development of the interstitial gland, at the moment of conception, two elements, a male and a female, combine to form an entity. These elements are warring elements, each of them potentially charged with their characteristic interstitial glands, which develop very early in embryonic life. For several weeks this embryo is neuter, and then later, one, say the male, gains the victory, so that the penis and scrotum instead of the vagina and uterus result. But the victory is never complete, and in every child born there remain a certain number of antagonistic interstitial cells. At the age of puberty there ensues a second battle royal, and side by side with primary male characteristics, there may develop some secondary female characteristics, such as broad pelvis, high pitched voice, with female mentality and feminine tastes. There is no man without some taint



of the woman in him, and no woman but has some smatch of the male. From these considerations, two points of social importance emerge; one the question of the determination of sex in the embryo; the other is the attitude which the civilized community should adopt toward homosexuality. Regarded in the light of pure physiology it is no more reasonable to punish a man for being homosexual than it would be to punish him for having red hair. In the matter of sex determination, if the foregoing has any truth, it ought to be possible to reinforce the male element in the embryo by male interstitial gland administered to the mother. Also at puberty it might be able to insure against homosexuality by administering male gland to the male. But the proper dosage would be required very definitely, for the antagonism of glands to each other is very definite, and a small dose might result in a harder blow from the antagonist. In the testicle there is a never ending combat between the internal secretion, on the one hand, and the external, on the other, and the bone of contention seems to be the lion's share of the blood supply. Soon after the introduction of x-rays, it was found that the operators, subject to constant exposure to these rays, became sterile, without loss of sexual capacity or sexual appetite. It was shown that the action of the rays was to cause atrophy of the seminal vesicles and concomitant hypertrophy of the interstitial glands, which is the same result as is produced by the ligature of the vas deferens. An elderly man, therefore, who wishes to renew his youth need only find a radiologist who can expose one testicle, and one only, with a dose sufficiently powerful to ensure the atrophy of the seminal vesicles on that side. The interstitial glands will then hypertrophy and fructify, with results which may or may not be altogether desirable to the individual.

We must consider the ductless glands as a system, so that where there seems to be deficient or superabundant activity in any one gland, we must make our therapeutic appeal to the endocrine system at large. The main enemies of man are toxins, and against these, the main defense is the ductless glands. From a biological point of view, there is no reason why a man should be senile and effete at 70. As to the question of the toxins which the endocrine system is at such pains to neutralize and nullify, one must remember that man is the only animal who has lost the instinct of selecting his food, and that man is the only animal that cooks his food. The Almighty no more invented the kitchen than he invented the gin palace or the

opium den. Cooking destroys vitamins, and vitamins are to endocrines what endocrines are to the economy, of the organism as a whole.

L. C. JOHNSON.

HEHIR, P.: **Effects of Chronic Starvation During the Siege of Kut.**  
*British Medical Journal*, June 3, 1922, No. 3205, p. 865.

The siege of Kut lasted 148 days, and the men who underwent the siege were subjected to great physical strain and exceptional hardships just before it began. The protein ration was kept up fairly well during the siege, and while the ration of bread was not below 10 oz. and the butter and bacon continued, there was no rapid loss of weight or stamina, but when the loaf was reduced to 8 oz. and all bacon and butter ceased the men began to lose weight and condition, rapidly. This was true of both the blacks and the whites. From a physiological point of view the most serious deprivations were the absence of hydrocarbons. The troops were lacking in energy, debilitated, and incapable of any serious strain. The greatly reduced ration in carbohydrates led to the removal of nearly all glycogen from the liver and muscles, as was demonstrated by the ease with which the men became fatigued, their inclination to remain at complete rest, and the speed with which they collapsed, with a marked subnormal temperature, when subjected to an attack of diarrhea or some other malady causing a drain on the system. Also it was extremely difficult to restore the heat of the body, once it had been lost. The author was unable to gauge the extent to which salt deprivation affected the health and nutrition of the troops, but it is possible that the diarrhea and gastro-intestinal upsets which occurred late in the siege, were partly due to this. In chronic starvation, as in this siege, these factors are noteworthy; loss of weight, the average white being 121½ lbs., and average black 17 lbs., or from 10 to 17 per cent body weight; lowering body temperature, the white showing an average of 96° in the morning and 97° in the evening, while the blacks were on duty with a temperature of 94° or 95° and in some just prior to death it was 90°; fatiguability, rest being required every few minutes and sentries often dropped in syncope if the spell of duty was more than an hour; inclination to sleep, fall in pulse rate, and marked lowering of mental vigor and morale were also most marked. Diarrhea was by far the most prevalent disorder met with during the



siege, and this often began a sort of chronic dysentery, which was often the terminal event of the men. There was also an outbreak of scurvy and cases of beriberi, but the British got beriberi and no scurvy, and the Indians had scurvy and no beriberi. The British used white flour and had horse flesh while the Indians used brown flour and ate little horseflesh.

In treatment it is essentially necessary after prolonged periods of partial starvation, to exercise the greatest caution and discretion in returning to ordinary food. Only the most digestible substances should be partaken of sparingly, and at short intervals, solid foods being eschewed at first. Death frequently occurs in those, who after long abstinence from food suddenly and completely gratify the natural cravings of hunger. It was a long time before those who went through the siege regained their normal weight; in the author's own case, one and half years. The digestive glands of stomach and intestines, pancreas and liver, have undergone considerable atrophy, and are long in recovering their normal functional activity.

L. C. JOHNSON.

CHEATLE, G. L.: **Cancer of the Breast.** *British Medical Journal*, June 3, 1922, No. 3205, p. 869.

No surgeon of experience can be satisfied with the results obtained by the present surgical treatment of cancer when it arises primarily in the breast. The term "proemial breast" is employed to indicate a condition of the breast which makes it a prelude to later developments of simple papillomata and malignant papillomata and other forms of cancer. It is regarded as more accurate than the terms "precancerous" and "precursory". It is a fallacy to maintain that every breast that appears nodular on palpation, is in a pathological state. The proemial breast is in a state that makes it a prelude to other pathological changes, and its clinical recognition, and treatment enables the surgeon to recognize (microscopically) the presence of one or more of these changes before there is any clinical sign or evidence. Pain is a prominent symptom, severe or aching in character, which is not always affected by menstruation, and is often continuous. Usually nodules are to be felt which are usually painful and tender. There may be an intermittent or serous discharge from the nipple, always small in amount. Later the pain dis-

appears, and cysts may be present, with a resulting continuous thick white discharge. Pathologically, in the early stages there is a more or less desquamative hyperplasia of the ducts, particularly of the smaller ones and acini. This leads to the formation of cysts, which when they are large are lined by a degenerated atrophied epithelium, which at parts has been shed. The connective tissue around the affected parts shows hyperplasia, and there is lymphocyte infiltration. It is not suggested that this type of breast is doomed to lead to grave pathological changes, but it is in a condition which is entirely favorable for their genesis, and in some breasts considered to be in the proemial state, grave changes have been found to have taken place. This breast bears the same relation to cancer and papillomata of the breast as does the proemial appendix to peritonitis, and is to be removed for the same reason. The treatment of course, is removal, and if malignancy is found to exist a radical operation is performed at an early date. This is in line with preventive surgical treatment employed in other regions of the body, for cancer of the breast and general peritonitis are just as far beyond surgical control now as they have always been.

L. C. JOHNSON.

LORNIÉ, P., AND JONES, D. E.: **The Treatment of Asylum Dysentery By Means of Antidysentery Serum.** *British Medical Journal*, June 17, 1922, No. 3207, p. 949.

Ten cases are cited which were treated by the use of antidysentery serum, obtained from Burroughs Wellcome and Co. The serum is prepared by injecting horses with cultures of Shiga's, Flexner's and Kruse's bacilli, and was given intramuscularly or hypodermatically in from 20 to 45 c. c. doses. The results in each case were most gratifying. Within a very short time, 24 hours in some cases, blood and mucus disappeared from the stools, there was cessation of the diarrhea, fall in temperature, and very marked improvement in the general well-being of the patient. The treatment is very much more satisfactory than any other which has been employed in past years, and when one considers that in asylums, in 1921, there were 728 cases of dysentery, and that of these 126 died, the value of antidysentery serum treatment is apparent.

L. C. JOHNSON.



HURST, A. F.: **Sins and Sorrows of the Colon.** *British Medical Journal*, June 17, 1922, No. 3207, p. 941.

The sins of the colon are its diseases. It is, however, probably more sinned against than sinning, with attacks from above with purges, and from below with douches. A more thorough appreciation of its normal anatomy and physiology, and the routine employment of the various methods of examination are wanted in order that its sins may be recognized at such an early stage that treatment may lead to their complete and permanent relief. The motor functions of the colon depend upon tone and peristalsis, which are mutually independent. Peristalsis is often very active in the presence of hypotonus, and may be weak or irregular in the presence of hypertonus. The tone of the colon depends largely upon the bulk of its contents, and varies continuously according to the amount of feces and gas present in each segment at the moment. With x-ray examination, there is a marked contrast between the continuous peristalsis and segmentation of the small intestine, and the completely motionless colon if the shape of the colon be examined every hour of the day it is found that it only changed materially after those hours in which a meal was taken. Two or three times a day a powerful peristaltic wave moves rapidly along a considerable length of the bowel, carrying all the contents before it. The chief stimulus to this movement is the gastro-colic reflex, which follows the entrance of food into the empty stomach. During the greater part of the day the cecum, ascending colon, and pelvic colon, are more or less full, and the rest of the colon is generally empty. A case of constipation which does not respond to simple treatment should have the benefit of x-ray examination, and this should not be carried out until a patient has desisted from the use of aperients for at least 48 hours. An enema may be given on the day previous to the examination and on the day of examination, and the remarkable variations in position of the colon in normal individuals should be borne in mind. The position of the cecum ascending and transverse colon shows wide normal variations, and it is not pathological for the cecum to drop into the pelvis in the erect posture. Ptosis of the colon rarely gives rise to symptoms by causing kinks, and stasis in the colon must be considerable before it can be regarded as of real importance. More than half of the cases of severe constipation treated have been pure

dyschesia, or inefficient defecation. Colitis is inflammation of the colon, and the term should not be used in the absence of any evidence of inflammation. When mucus is present with soft or fluid feces, colitis is more apt to be present than when it appears with hard feces. More important than mucus is the presence of pus in the feces, which always indicates that some organic pathological condition exists, and the sigmoidoscope should be used for examination. Symptoms result far more frequently from the artificial diarrhea caused by purgatives than from intestinal stasis. Purgatives often cause abdominal pain, intestinal stasis, rarely. Intestinal lavage is a valuable remedy, but its precise indications require to be defined. It is useful to remove retained feces from a colon which, on account of its inflamed or irritable condition ought not to be further irritated by the use of aperients, and the fluid used should be of a non-irritating character. Intestinal lavage is also of value in treating the severer forms of colitis by the use of astringent and antiseptic solutions. In this local treatment of colitis, the author has found albargin, a silver nucleinate, most useful, in a solution of 1 grain to the ounce. In administering the douche, the rectal tube should not be passed more than 2 inches beyond the anus, and not more than a pint and a half of fluid used. The knee elbow position is the best one to employ as it renders the pelvi-rectal flexure less acute, allows the fluid to pass more readily into the pelvic colon, and prevents the overdistension of the rectum. Apart from the treatment of cancer of the colon, diverticulitis, and other causes of acute and chronic obstruction, the indications for surgery in diseases of the colon are few. Appendicostomy is necessary only in those cases of ulcerative colitis which do not respond to intravenous doses of anti-dysenteric serum. Intestinal stasis requires surgical interference only in very rare and neglected cases. Colectomy, for stasis, which reached its height of popularity shortly before the war, is gradually becoming obsolete.

L. C. JOHNSON.

KAST, L., CROLL, H. M., AND SCHMITZ, H. W.: **The Therapeutic Use of Germanium Dioxid in Anemia.** *The Journal of Laboratory and Clinical Medicine*, August, 1922, vii, No. 11, p. 643.

The influence of germanium dioxid on red blood-cell formation has been studied in 16 cases of anemia—4 cases following hemor-



rhage, 10 cases of secondary anemia and 2 cases of pernicious anemia. In some of these cases the germanium was found to have distinct erythropoietic action. Whether this property shall prove to be of great therapeutic value in the treatment of the anemias remains to be shown by further careful study of more cases than are here presented.

C. M. ANDERSON.

GROTE, L. R.: *The Pathology and Therapy of Achylia Gastrica* (Die Pathologie und Therapie der Achylia Gastrica). *Klinische Wochenschrift*, April 29, 1922, 1, No. 18, p. 889.

Objectively the test breakfast of bread and water one hour after ingestion lacks in fluidity, the particles are poorly chymified and have the appearance of being chewed and expectorated. The Congo reaction is absent and pepsin is absent or present in traces only. The total acidity is never above 10, usually about 6. The stomach empties rapidly and there is seldom any bile present. The symptoms are usually those of a chronic gastritis.

The author classifies the cases as follows:

(1) *Gastrogenic Achylia*.—This is due to chronic gastritis following dietetic insults, alcohol, tobacco, etc. There is a complete disappearance of the gastric glands. In advanced cases there is an absence of mucus. This type of achylia occasionally follows gastric ulcer and occurs frequently in senility.

(2) *Toxogenic Achylia*. (a) Achylia of carcinoma produced by toxic substances secreted by the tumor and acting on the gastric mucosa. Extragastric carcinomas (breast, etc.) are often accompanied by an achylia.

(b) Chronic infectious diseases as in tuberculosis, colitis, sprue, typhoid, cholecystitis, and syphilis.

(c) Blood diseases as pernicious anemia. The author studied 46 cases of pernicious anemia and found an achylia present in every case.

(d) General cachexia as tuberculosis, diabetes, and Graves disease.

(3) *Reflex Achylia*.—The author describes a "war achylia" which he attributes to psychical influences. These cases occasionally

show the presence of free acid and correspond to the heterochylia of Einhorn and Hemmeter.

(4) Constitutional Achylia.—Usually hereditary, and due to faulty gastric development or lack of development. This form is described by Martius and usually is symptomless.

The treatment depends upon the cause. Hydrochloric acid in large doses, gastric lavage with boric or salicylic acids from a germicidal standpoint are indicated.

H. JOACHIM.

LEVISON, L. A.: **The Relation of Achylia Gastrica to Chronic Focal Infections and Pernicious Anemia.** *The Journal of Laboratory and Clinical Medicine*, August, 1922, vii, No. 11, p. 652.

Three cases are cited, in each of which patients having foci of severe infections passed through the stage of an achylia gastrica and later pernicious anemia. The assumption that long continued foci of infection may depress the gastric secretion and produce an achylia gastrica is justifiable. There is no reason to believe, on the basis of any evidence yet brought to bear, that achylia gastrica in itself is a predisposing cause of pernicious anemia. There is clinical evidence to believe that focal infections long continued may depress the function of the bone marrow and prevent the formation and development of new red blood-cells.

It is urged that when achylia gastrica is found in a patient showing evidence of chronic focal infections that the possibility of the development of pernicious anemia be carried in mind with the view of insisting that all infections be removed insofar as is humanly possible. Achylia gastrica is used here in the sense of a depression of the gastric secretion with relation to HCL and not necessarily with complete absence of gastric ferments.

C. M. ANDERSON.

WILLIAMS, L.: **The Thymus Gland.** *New York Medical Journal*, April 5, 1922, cxv, No. 7, p. 388.

We recognize in the thymus an intrathoracic gland, variable in size, which, so far from disappearing in the course of the first two years of life, continues to grow, up to, and even in some cases beyond,



the age of puberty; at which point, though its essential histological structure may undergo atrophy, the noble elements are frequently so replaced by fat and connective tissue that the original bulk of the organ is in nowise decreased; moreover, the atrophy of these noble elements is never so complete as to prevent them from sufficiently proliferating as to restore the gland to its original integrity.

It has a close relationship with the genital organs in the male, but not in the female. It is not an exclusively male organ, any more than the thyroid is an exclusively female organ. It is a sort of male thyroid, is possessed of the same miraculous power, though inferior, of enlarging itself and decreasing in response to stimuli.

Sir Edward Schafer says: "The functions of the thymus are more obscure than those of most endocrine organs; it is questionable whether it should be included among them. But the mutual relations which appear to be established between it and the generative glands in the male sex, entitle it to occupy a place among them." "Small portions of thymus tissue are frequently found embedded in the thyroid; on the other hand, an accessory thyroid is often met with in the substance of the thymus."

The gland overlies some of the most important structures in the body, such as the aortic arch, the common carotids, the right ventricle, the innominate vein, the phrenic nerves, the vagi and laryngeals, the middle and inferior ganglia of the sympathetic, and the trachea and its bifurcation.

The child with an enlarged thymus is typically the serofulous child, the angelic child of the elder Gross, a thing of beauty, but lacking in the full promise of life. Such children are not assured of maturity, but are liable to be eliminated by sudden death, by tuberculosis, cerebrospinal meningitis or other infection.

The thymus often causes sudden death by obstruction to the trachea. It is also the cause of asthma, the symptoms of which are due to mechanical obstruction and to superadded nervous and probably vascular disturbance, the whole complex being the result of pressure exercised on various structures by the enlarged thymus. This should be correlated with the concertina-like capabilities of the thymus gland and its readiness to enlarge in the spring and early summer, and its sensitiveness to the influence of climate, and probably to foreign proteids.

An enlargement of the thymus by partially blocking the upper thorax will produce headache. To detect persisting or enlarging thymus, one must go over carefully the ordinary method of inspection, palpation, percussion and auscultation. First, look for evidences of insufficient drainage of the head and neck; i. e., the hair of silken texture, the fine, almost atrophic skin and brilliant complexion of slightly obstructed venous return; the cold congested ears; the brittle and readily decaying teeth; the slight glandular enlargements, internal, as the tonsils, and external, as the lymphatics. Lower down, an unduly prominent manubrium sterni and prominent veins. The importance of this will vary with the patient's age.

One may often feel the enlarged thymus just below the episternal notch. Percussion yields a great deal of useful information. Extension of the head and neck brings the gland into apposition with the upper sternum. In this attitude, an impairment of resonance not noticeable in the ordinary posture, becomes unmistakable. The percussion should proceed from below upwards, from side to side, and always along a rib. The impairment extends further to the left than to the right.

As to auscultation, there is a muffling of the heart sounds at the base, especially of the pulmonic second sound. A great many of the so-called hemic murmurs heard at this point are due to the direct pressure of the thymus upon the pulmonary artery. The inspiratory breath sounds heard over this area are harsh in quality, and the expiratory are prolonged. All these findings will be accentuated by causing the patient to extend the head and neck.

Among the causes of thymic persistence or hypertrophy is intestinal toxemia. As to treatment, the surest way of securing the decrescence of an intruding thymus is by stravation. But fasting is neither agreeable nor popular. Of other means, the most potent is exposure to x-rays. A simple means of affording relief is the ventral or facial decubitus. The thymic child and the adult chronic asthmatic has on one hand, the drooping shoulders, and almost hunch-back appearance of the other, in seeking to avoid the extension of the head and neck. The ventral decubitus is naturally adopted by most young children.

Suparenal extract is useful in all forms of thymic enlargement.

J. ROSE.



HARRISON, L. W.: **Modern Treatment of Syphilis.** *British Medical Journal*, July 1, 1922, No. 3209, p. 1.

In 1910 we saw the introduction of arsenobenzol compounds, and with it a revolution in antisyphilitic treatment which is not yet over. An investigation to discover the minimal amount of treatment to cure an average case of early syphilis, before the war evolved that the following course was insufficient, as it was followed in about 25 per cent of cases by a relapse either serologically or clinically; one dose of 0.6 gram of "606"; five 1 grain doses of mercury; another dose of "606"; five more doses of mercury; and a final dose of "606". During the war in attempting to increase the dosage, but decrease the time of the course, 8 doses of 0.3 gram of "606" were given in 28 days with mercury. Cases of "encephalitis hemorrhagica" did not occur, but jaundice and dermatitis did appear. They both have certain features in common; both are apt to be fatal; both appear long after a course of injections have been given. Dermatitis has become less frequent since the war, perhaps because the patients are less exposed, but jaundice has become more frequent. Although it appears in outbreaks, there is a relationship between the intensity of treatment and the incidence of jaundice. The resemblance of what may be called arsenobenzol poisoning to that seen in the war amongst T. N. T. workers has given rise to the idea that it is not due so much to the effects of the arsenic as to the organic complex arsenobenzol.

In treatment, in addition to the "606" and "914" the author has used sulfarsenol which is closely allied to them, and he has had excellent success in cases where he has used it subcutaneously or intramuscularly. Mercury is given in the form of mercurial cream or as salicylate, by injection. At various points in a course iodid is given, in the belief that it helps in the resolution of the process. The minimum treatment proceeds far beyond the stage when the Wassermann is negative. Nobody knows how much deviltry is going on behind a negative Wassermann, and mercury given for 2 years leaves a high per cent of cases uncured. For later cases, a number of short courses is preferable, and treatment is continued beyond the stage when symptoms have gone. If treatment is prolonged the Wassermann will become negative, and the gradual change can be noted if the strength of the reaction is titrated. For nerve cases, silver sal-

varsan has been very effective, and with the exception of general paresis the outlook for nerve cases is generally good.

L. C. JOHNSON.

ROGERS, L.: **The Spread, Probable Mode of Infection, and Prophylaxis of Leprosy.** *British Medical Journal*, June 24, 1922, No. 3208, p. 987.

The most important of conditions favoring the spread of leprosy, is a low stage of civilization, great sociability, low state of morals and sexual promiscuity, and social customs, such as eating with the fingers from a common dish or smoking a common pipe. Climate alone seems to have little influence on its spread, except where there are long winters and people are crowded into poorly ventilated homes, or unable to lead an open-air life for a large part of the year. The disease is communicated directly, from one patient to another. In studying 700 cases, 18.28 per cent were conjugal or cohabiting individuals; 38.84 per cent occupied the same house, room or bed of a leper; 19.87 per cent were attendants upon lepers; and 19.42 per cent were playmates or had close association. Apparently there must be long and close contact before infection occurs, but it is generally recognized that children and adolescents between the ages of 5 and 20 years are especially susceptible. A careful study of the subject of inoculation the author inclines toward the belief that the common mode of infection is the inoculation of the bacilli through minute accidental lesions of the skin or mucous membranes of the nasal or oral cavities. The first essential in prophylaxis is the removal of the infective cases from frequent and close contact with the healthy, and particularly the most susceptible, children and young adults. The most infective type is the tubercular form, including mixed cases with discharge of large numbers of bacilli from the nose and breaking down nodules. Now that we possess in the solution preparations of the active unsaturated fatty acids of chaulmoogra, cod-liver, soya bean, and other oils introduced by the author, lepers have for the first time a powerful incentive to come forward for treatment as early as possible, instead of hiding their calamity. This treatment clears up the bacillus-bearing lesions of leprosy, with loss of infection, including cessation of the discharge of the organisms from the nose. Once a fair proportion of the earlier and more amenable



cases receive regular treatment, rendering them no longer infective to their households and neighbors, new cases should gradually decrease, while the advanced and helpless will die out by degrees, and slow but sure progress will be made in reducing the incidence of perhaps the most dreadful disease to which the human flesh is heir.

L. C. JOHNSON.

PICKARD, R. J.: **The Clinical Value of Basal Metabolism Determinations.** *The Journal of Laboratory and Clinical Medicine*, August, 1922, vii, No. 11, p. 669.

Increased basal metabolic rates are found in hyperthyroidism, in all febrile conditions, and in the active state of acromegaly. In other diseases, as essential hypertension, pernicious anemia, leukemia, diabetes with acidosis, cases with dyspnea, a rate above normal may be present occasionally. A decreased basal metabolism is present in myxedema, in cretinism, and in a lesser degree in hypopituitarism; the rate is low in inanition, starvation, and undernourished diabetics. Excluding these few, other condition changes in the basal metabolic rate are due to thyroid disease.

A routine estimation of the basal metabolism should be made (1) in cases with goiter to ascertain possible toxicity; (2) in cases with or without goiter having symptoms resembling those caused by hyperthyroidism; (3) in similar cases with symptoms of thyroid deficiency; (4) in cases of obesity, to differentiate those due to thyroid and pituitary disease; and (5) for an accurate measure of the effect of treatment of thyroid disease.

The diagnostic value of the basal rate is greatest in the group of cases with one or more of the symptoms of those caused by hyperthyroidism. Cardiac disturbances as tachycardia, cardiac myasthenia and palpitation; fine tremors, general debility, loss of weight, anemia, attacks of vomiting and diarrhea, psychic changes as depression and irritability, psychasthenia, sweats, are symptoms, obviously, of the most diverse etiology, but are symptoms which the exclusion of thyroid disturbance or its acceptance as cause can be made by a determination of the basal metabolism "as the final court of appeal".

This test is especially useful in the differential diagnosis of hysteria, neurasthenia, early tuberculosis, and neurosis simulating thyroid disease. It is necessary in the diagnosis of "effort syndrome",

Da Costa's irritable heart of soldiers, in which there is an increased sensitiveness to epinephrin, but a normal basal rate. Epinephrin raises the basal metabolism but no relation has been found between the amount of the rise and the intensity of a hyperthyroidism, its effect being attributed to action on the sympathetic nervous system.

In hyperthyroidism the operative risk should be gauged by this test judged in combination with the other symptoms, particularly the cardiac reserve, and the need or character of medical or surgical treatment considered on an objective basis as much as possible. Rates of 100 plus or over are dangerous, and should be reduced by absolute rest in bed. Rates of 75 plus, very severe; rest, hot water injections or ligations, should be considered preliminary to partial thyroidectomy. The basal rate should be tested every two weeks and the operation timed accordingly.

The roentgen ray treatment has been compared with surgical results by Means and Aub. They suggest using x-ray first, a cure may be effected, at least the metabolic rate will be reduced and surgery made safer. If the basal rate is high after surgery the x-ray may be employed again. Means' latest report is still more favorable to the x-ray in that the patients treated by the rays were normally active during the course of the treatment. Some surgeons object to the increased difficulty of the operation from fibrosis. DuBois says a partial thyroidectomy has been and perhaps always will be a standard treatment.

C. M. ANDERSON.

BRONFIN, I. D., AND MARKEL, C.: **The Upper Respiratory Tract in Pulmonary Tuberculosis with Special Reference to Laryngeal Tuberculosis.** *American Review of Tuberculosis*, July, 1922, vi, No. 5, p. 341.

The upper respiratory tract was studied in 200 tuberculous patients, in the moderately advanced or far advanced cases, with an average pulmonary duration of 507 years. Abnormalities of the nasopharynx was noted in 64 per cent and nasal stenosis in 62 per cent, but the number of cases with positive laryngeal tuberculosis was not greater in those with nasal obstructions than in those with normal nasal chambers. Atrophy of the nasal mucous membrane was not a frequent manifestation and seemed to have no definite relation to laryngeal tuberculosis. Definite pathological changes of laryngeal



structures were observed in 83 per cent; and in 63 per cent the laryngeal lesion was of such a type as to warrant a positive clinical diagnosis of tuberculous laryngitis. Five positive cases had associated syphilis, 2 of which received specific treatment without any demonstrable effect on the laryngeal lesions, and the other three presented the characteristic lesions of tuberculosis. In the 3 the lesion was subacute and stationary, and in the other 2 the lesion was chronic and stationary. The quickest and most satisfactory results were obtained with cautery. While all the active throat cases that were under the different forms of treatment improved, 139 cases under no treatment also improved and remained stationary with the exception of 8 whose lesion was progressive.

In concluding the authors state:

(1) Laryngeal pathological changes are present in at least 85 per cent of the tuberculous.

(2) Laryngeal tuberculosis is present in at least 63 per cent of the tuberculous.

(3) Acute or peracute laryngeal tuberculosis is rare, the most frequent type is subacute or chronic.

(4) There is no definite predisposing factor other than pulmonary tuberculosis.

(5) Syphilis has no apparent influence on the course of laryngeal tuberculosis.

(6) Subacute or chronic tuberculous laryngitis requires no active treatment in the absence of distressing symptoms, but must be under constant observation.

(7) Presence of ulceration even in absence of symptoms is an indication for active treatment.

(8) Galvanocautery is the best therapeutic measure for ulceration or large infiltrates giving symptoms.

C. A. SCHMID.

OLIVER, J., AND YAMADA, SO SABRO: **Biological Reactions of Arsenphenamin.** *The Journal of Pharmacology and Experimental Therapeutics*, July, 1922, xix, No. 6, p. 393.

Dissodium arsenphenamin may produce ill effects by means of either physical or chemical effects.

The *physical* toxicity produces an early reaction and is the result of intravascular agglutination of the red cells and multiple embolism.

The *chemical* toxicity requires some time for the production of anatomical lesions. These consist of parenchymatous degeneration particularly in the kidney and liver.

C. A. SCHMID.

NICHOLLS, L., AND HAMPTON, G. G.: **Treatment of Human Hookworm Infection With Carbon Tetrachlorid.** *British Medical Journal*, July 1, 1922, No. 3209, p. 8.

Following the work of Hall, suggesting the use of carbon tetrachlorid for the removal of worms in animals, it was decided to try this drug in the treatment of children who in Ceylon are heavily parasitized with hookworm. A murderer, under sentence of death, volunteered to take the drug; he was given 6 c. c. after the noonday meal, and the same day passed four worms, (*ascaris lumbricoides*); 13 days later, the same dose was repeated before breakfast, and he complained of a little giddiness, which soon passed off; a week later he was executed, and autopsy performed within an hour, showed no hookworms or ascarids in the intestinal tract, and examinations of the organs, in section, microscopically showed no degeneration in any of them. The drug was then tried on students and young children, and of 54 which were examined most carefully 88 per cent showed no ova or evidence of infection 10 days after treatment. Besides hookworm and ascaris, oxyuris and trichiuris were also recovered from the stools of these and this would seem to indicate that the drug is active along the entire intestinal tract. The drug is an efficient vermifuge for hookworms, and will remove those which chenopodium has failed to dislodge. It may be administered safely in doses of 10 to 20 minims to children of 3 and 4 years of age, even when they are seriously ill from various causes. It is not as effective as chenopodium in killing *ascaris lumbricoides*. The drug does not seriously deteriorate on keeping, as many children were given carbon tetrachlorid which had been stored in the laboratory for 3 years. It is more valuable than chenopodium for campaigns against hookworm disease, because patients do not object to its taste; it is not necessary to precede or follow the administration of it by a purge; it is more efficient than chenopodium and has not the depressing effects of that drug; it is much cheaper than any other drug that has been used;



it can be prepared in a high degree of purity, and a chemically pure preparation should always be used; the person who is being treated can do his usual day's work. Children of one year can be given 10 minims with safety and the dose increased 2 minims for each year of apparent age. A child of 10 would receive 28 minims; a youth of 16 years, 40 minims; an adult dose should be 50 to 80 minims (3 to 5 cm.) according to the size of the patient. *Chenopodium* is soluble in carbon tetrachlorid, and a mixture of one part of the former in 4 of the latter is efficient for the expulsion of *ascaris lumbricoides*.

L. C. JOHNSON.

**HAMMETT, F. S.: The Probable Function of the Parathyroid Glands.**  
*New York Medical Journal*, April 5, 1922, cxv, No. 7, p. 401.

The parathyroids are glands of internal secretion with a function *sui generis*. The most immediate effect of parathyroidectomy is tetany. There are three hypotheses advanced as explanations of tetania parathyreopriva: (1) That of a calcium deficiency with its resultant increased neural irritability. It is based on the finding of a decreased calcium content of the blood of parathyroidectomized animals. (2) The hypothesis of Wilson, Stearns and Janney in which the tetany is attributed to an alkalosis. Finally, that of Paton, that the tetany is due to the accumulation of a guanidin compound, presumably methylguanidin, which the loss of the parathyroids has allowed to take place. This substance is a toxic nerve irritant. When this compound is injected it produces tetany similar to parathyroid tetany. Guanidin tetany may or may not be relieved by the administration of calcium salts.

Under normal conditions creatin is an important product of muscle tone, and is relatively innocuous for the organism. It is changed to creatinin by the loss of one molecule of water and excreted in the urine. Creatin is acetylated methyl-guanidin.

Methyl-guanidin may be a normal by-product of muscle tone and is detoxicated by acetylation to creatin, therefore the parathyroids produce a secretion which favors this detoxication, and the probable function of the parathyroid glands is the elaboration of a secretion which assists in the prevention of the accumulation in the organism of the toxic nerve irritant methyl-guanidin as a by-product of that phase of muscle metabolism concerned in muscle tone.

J. ROSE.

McILROY, A. L.: **The Ovum as an Internal Secretory Organ.** *New York Medical Journal*, April 5, 1922, cxv, No. 7, p. 404.

The secretion from the ovum is conveyed by its cellular tissue into the maternal blood stream and not by ducts or nerve influence. This is proved by cases of tubal and ovarian pregnancies, and by pregnancies where paralysis of the lower limbs is present, or where section of the cord has been performed in the lumbar region. Chemical substances are generated by the ovum and are rendered innocuous by antibodies which owe their protective energy to the healthy condition of the thyroid and other endocrinous organs.

The enlargement of the thyroid, pituitary and adrenal cortex in pregnancy proves the functional harmony between the ovum and the internal secretory organs. The local changes in connection with the ovum are much more obvious although no substance has been isolated which might compare with adrenalin, pituitrin, or thyroxin. The ovum may be a stimulant and regulator of metabolism on the one hand, and on the other may be a parasite upon the maternal host.

The ovary is concerned with the malnutrition found in osteomalacia. It is involved with the thyroid in calcium metabolism and its storage in the later months of pregnancy. The pituitary is enlarged after oöphorectomy, parathyroidectomy, and in pregnancy. The adrenal cortex is enlarged in pregnancy and pigmentary changes occur in the skin. The blood-pressure is raised in pregnancy; nitrogen changes in the maternal metabolism and the glycogenic function of the ovum together with the sugar changes in pregnancy are being investigated with a view to elucidate the metabolism of the carbohydrates. The internal secretory organs are protective in their function for the maternal organism but the ovum mainly looks after its own interests.

J. ROSE.

KRAMER, W. D.: **Clinical Observations on the Pathogenesis of Diabetes Mellitus.** *New York Medical Journal*, April 19, 1922, cxv, No. 8, p. 472.

Diabetes is a condition due to a disturbance of the pancreas with changes in the islands of Langerhans. The hyperglycemia may be a manifestation of a disturbance of the ductless glands, commonly the



pancreas, sometimes the thyroid, pituitary or the adrenals. This may be brought about by neurogenic factors or by infection. It may be due to some changes in the peripheral cells which are no longer able to utilize the normal quantities of sugar sent to them for the completion of sugar metabolism. This alteration in function may result from nervous influences or low grade infections. More often there is a combination of influences. Something happens whereby the coöperation between the sugar production and distribution centers and the peripheral cells, which complete sugar metabolism, is lost. Team work is lacking. There is a constant demand for increased sugar distribution despite the fact that there are present, greater quantities of sugar than the cells can utilize.

Diabetics may be classified into 4 groups according to the clinical picture presented: (1) Where there is evidence of endocrine dysfunction; (2) where there is disturbed tissue metabolism; (3) vascular changes; and (4) tumors.

Group 3 and 4 are uncommon, and since the pancreas is directly involved, we may practically consider these cases under that heading. Most of the cases belong either to the endocrinopathies or Group 2, in which we have impaired metabolism of the peripheral cells due to the various conditions mentioned above.

Low grade infections may have a decided influence upon tissue cells interfering with their functions.

Obesity may have some effect by putting an unnecessary strain upon the supply of pancreatic hormone, but usually it is an effect rather than the cause.

Neurogenic influences play a greater role than hitherto believed. The factor is present in a large percentage of diabetic patients. It may act either directly upon the sympathetic nerve system and its closely related ductless gland system, or by producing an altered function of the tissue cells.

J. ROSE.

STRICKLAND, G. J.: **The Premature Contraction and Its Significance.**  
*New York Medical Journal*, February 15, 1922, cxv, No. 4, p. 204.

Extrasystoles indicate hyperirritability of the myocardium. Hyperirritability of the myocardium is produced by either extrinsic or intrinsic causes, the latter being more important. It represents a

definite stage in the physiological process of fatigue and the pathological conditions of inflammation, degeneration, and toxemia, hence extrasystoles are indications or manifestations of such conditions. Extrasystoles are important according to (a) the nature of the underlying condition, and (b) the amount of intravascular strain and amount of circulatory disorganization they produce. Auricular extrasystoles are always intrinsic in origin and indicate definite damage to the auricular myocardium. They precede flutter and fibrillation and give rise to paroxysmal tachycardia. Right ventricular extrasystoles indicate left ventricular fatigue and precede failure, especially in aortics. Extrasystoles of any type in complete heart-block seriously disorganize and embarrass the circulation and must always be regarded as serious.

J. ROSE.

PRICE, W. F.: **Paroxysmal Tachycardia.** *New York Medical Journal*, February 15, 1922, cxv, No. 4, p. 212.

This is a condition in which a marked acceleration of the cardiac rate occurs, which commences suddenly and abruptly and without apparent cause, lasts for a varying period, ceases suddenly and abruptly, and is due to an abnormal rhythm, the stimulus for cardiac contraction, instead of arising at the junction of the great veins with the auricle, having its origin at an abnormal point. The return of the cardiac rate to what it was prior to the paroxysm is due to the reversion of the cardiac rhythm to the normal.

The new rhythm originates in the auricle and the ventricle responds to impulses from here; but it may arise in the ventricle and send impulses to the auricle.

The tachycardia may last only for a few beats or may persist for months; it generally lasts for some hours. There may be one attack or many in 24 hours, or they may occur at intervals, frequent or long, for many years. Permanent auricular fibrillation or flutter may supervene.

It may occur at any age after five, but usually during middle life. It is more common in males. A history of rheumatism is common and many cases have valvular disease, particularly mitral stenosis, also myocardial degeneration. The condition has been seen in alimentary toxemia, reflex irritation, neurasthenia, etc. Among ex-



citing causes are physical exertion, emotional excitement, digestive disturbances, particularly flatulant distention of the stomach or colon.

In some cases there is dyspnea and precordial distress on exertion. Other cases are free from subjective symptoms in the intervals, but in many cases auricular or ventricular extrasystoles are seen. In some cases the patient is able to recognize the onset and termination of the tachycardia. He becomes conscious of a fluttering sensation in the chest, also a sensation of pulsation in the neck. His face is pale, and has an anxious expression. The rate is usually above 140 a minute and may reach 300; in a majority of the paroxysms it is between 150 and 190; it should be counted at the apex, either by palpation or auscultation, unless it is extremely rapid, when graphic methods are necessary. The pulse is of smaller volume than normal and its character may resemble that of the *pulsus celer*. It may be regular, or very irregular when the condition is due to auricular flutter, or completely irregular when the result of auricular fibrillation. *Pulsus alternans* is frequently present. The blood-pressure is lower during the attack. The area and force of the apex beat may be increased.

In long continued paroxysms, and in some short ones, cardiac failure may be extreme. With the sudden reversion of the rhythm to the normal there is a rapid recovery to the state in which the patient was prior to the paroxysm; within a few hours, there may be no evidence of cyanosis, distension of the veins, cardiac dilatation, enlargement of the liver, or conditions of a similar nature.

The most important diagnostic points are: (1) The commencement and termination of the attack, (2) the cardiac rate, and (3) the cardiac rate is not influenced by change of posture or other forms of physical exertion.

Polygraphic or electrocardiographic examination will clinch the diagnosis. This may be considered from two viewpoints:

(1) That of a particular paroxysm. Death during an attack is infrequent, although this may occur when the attack is prolonged. When the ventricular rate is not very high, and there is little or no cardiac dilatation, and an absence of edema of the lungs, hepatic enlargement and anasæra, the outlook is good as to life, if the clinical picture be the reverse, the outlook is uncertain.

(2) That of recurrence of the attacks. The patient may never suffer from a second attack, while they may recur often. The degree

of integrity of the myocardium should be estimated between the attacks.

Bringing up of wind, vomiting, the adoption of a certain posture, pressure on the vagus, particularly the right, friction of the chest wall, and applications of an ice bag, mustard leaves, or warmth to the precordium, may be followed by relief. But the nature of the disorder is to stop suddenly. On dose of .01 gr. of strophanthin intravenously, or 2 or 3 doses  $1/250$  gr., every 2 hours, may be administered. Failing this, digitalis should be given by the mouth and pushed to the full physiological reaction. If there are indications of heart failure, proper treatment should be instituted.

Between the attacks, the general condition, and whatever appears to be the exciting cause of the paroxysms, should receive attention. Any gastro-intestinal disorder should be corrected. Bromids may be tried.

J. ROSE.

ALLBUTT, SIR C.: **A Discussion of Angina Pectoris.** *New York Medical Journal*, February 15, 1922, cxv, No. 4, p. 181.

Among the causes of angina are infections of the aorta. Dr. Brown points out that in the x-ray picture "where the arch curves over to make the descending aorta, a clear portion of the lung is normally visible between the aorta and the clavicle; but in the early stages of aortitis this clear area is absent, and instead the aortic shadow is seen posteriorly, or even above the shadow of the left clavicle." His observations "seem to substantiate Allbutt's contention that the symptom syndrome of angina pectoris is due to disease of the aorta itself." Clinical signs may be slight or absent, depending upon the depth of penetration of the lesion toward the investment of the vessel. In most of these cases in young persons, the coronary arteries are clear.

Angina may be of cardiac origin only in pericarditis, or coronary thrombosis. In coronary thrombosis the pulse is thrown into great disorder; so much so as to differentiate this from ordinary angina. The pulse is rapid and arrhythmic. There is pain no less severe but more diffuse and continuous and more about the region of the heart than in uncomplicated angina; restlessness, as contrasted with the stricken stillness of angina; and dyspnea and frequently palpable dilatation of the heart and audible pericardial friction.



Dyspnea means some complication of angina.

McCrae, agrees that the "pain of aortitis and of angina are similar if not identical." He considers aortitis angina as distinct, as its tendency is to recovery, and that "it is not mortal," because in young persons the angina is not associated with cardiac degeneration. Even syphilitic angina is rarely mortal so long as there is no heart disease.

The aorta dilates during a seizure of angina and does not pulsate. It is hard to distinguish abdominal angina from tabs.

Mackenzie attributes angina to enfeeblement of the heart. Bramwell attributes angina to stress on the nerve fitness and ganglia in the heart. The sensory nerve endings are in the investments, pericardial or periaortic.

*Verdens Theories.*—Angina pectoris is a disease which consists in a disturbance of the nervous mechanism of certain spinal segments by peripheral irritation arising not in the heart but usually in the stomach. The muscular coat of the viscus is strained, and the strain, reflected to its corresponding spinal segments, and often beyond them, arouses responses which may range from dyspeptic discomfort to a stormy anginal radiation. Spasm of the intercostal muscles, or of the diaphragm, is not constant in the anginous attack.

To produce the anginal symptoms the gastric disorder must disturb in some way a cardio-arterial system already deteriorated and reduced in potential; a little earlier in life by syphilis, later by arteriosclerosis. In many old persons to run only a few steps produces a substernal oppression. As to generation of pain, sensory nerve and organs lie not in muscle but in the connective tissue, developmentally subcutaneous, which invests the muscle. A few may be carried up on connective tissue by tendon, into the muscle proper; but the pain is generated in the investments and attachments of the muscle.

In segmentary neurosis the segment concerned is supposed to be in a state of excessive irritability.

Comparatively young patients, in whom the myocardium is healthy, generally recover; in elderly persons or where the myocardium has suffered recovery is infrequent.

In angina blood-pressure is variable and inconstant and depends on other factors. As to treatment, rest is the chief thing. The diet is adjusted to the state of rest and of the stomach.

The nitrites are an invaluable aid, but they must be fresh. In prescribing atropin, as a prophylactic against fatal inhibition, the dose may need considerable increase, to 1/50 or 1/30 gr. Digitalis may be useful. Diuretin, theobromin, sodium salicylate are useful when the circulation requires some reinforcement. Arsenic and iodid of potassium are of some service.

Jonnesco's operation for the relief of angina has also been used for the saving of life, by the division of the left sympathetic in the neck. Jonnesco assumes the origin of the pain to be in the chronically inflamed investment of the aorta.

J. ROSE.

MUTCH, N.: **Cardiovascular Disorders Produced by Disease in the Digestive Tract.** *New York Medical Journal*, February 15, 1922, cxv, No. 4, p. 206.

*Lesions of Toxic Origin.—Poor Circulation.*—Persistent coldness of the extremities is one of the commonest symptoms of intestinal toxemia of the putrefactive type. The ears, nose, toes and fingers become blue in cold weather and scarlet in hot weather. The temperature by mouth is subnormal even when the internal temperature, per rectum, is not depressed. The power of the skin to maintain an equitable temperature in the face of variations in the temperature of the surroundings is weakened. If a healthy man immerses his hand in ice cold water for a minute and then dries it without friction or heat, its surface temperature returns to its previous level in 5 or 10 minutes, but in simple intestinal putrefaction the hand will still be cold after a lapse of half an hour; similarly with heat. The patients excrete an excess of indoxyl and other putrefactive products in the urine but the exact chemical nature of the toxin concerned is still unknown. The condition is controlled by paraffin and aperients or by lactose (one ounce) taken with a saline purgative in a glass of water before breakfast each morning. The sugar which reaches the ileocecal region prevents the formation of the usual toxins. The condition also disappears at once upon the removal of the large bowel.

*Cerebral Anemia.*—When there is a general loss of muscular tone, the abdominal muscles become flabby and intra-abdominal tension falls. Blood collects in the large venous reservoirs in the abdomen and the circulation in the brain is impaired. Such patients feel best



in the morning. Later they become tired and their lips and cheeks pallid. The hemoglobin content remains constant and the phenomenon is due to local variations in the distribution of the blood. These patients crave cerebral stimulants, such as caffeine (in tea). They tolerate hot climates badly and feel best in cool weather. The symptoms are controlled by the application of a spring abdominal belt which produces the requisite intra-abdominal tension.

*Low Blood-Pressure.*—Some with intestinal stasis relapse into a condition resembling Addison's disease. Their systolic blood-pressure sinks to 90 mm. or lower. They experience much asthenia and abdominal pains. There is deep pigmentation over the eyelids and other parts of the body. The urine contains an excess of indoxyl and the small intestine is invaded by *Bacillus coli*. The amino acid histidin is converted by the *Bacillus aminophilus* into the depressor, histamin. This is not destroyed by the liver so that it reaches the general circulation.

These amins may be concerned with the etiology of obscure cases of excessive arterial blood-pressure. The best known pressor amin is tyramin obtained from tyrosin. The liver probably nullifies the pressor effect of any tyramin which is produced in the bowel since tyramin is readily converted into the corresponding hydroxyacid by the liver cells and this acid is an inert substance devoid of pressor action. Toxins of some nature are formed in the intestines and cause a rise in blood-pressure. In these cases there is an excessive amount of putrefactive products in the urine. The blood-pressure can be reduced by a diet poor in proteins, and attention to the bowels.

*Lesions of Infective Nature.*—In the chronic infective endocarditis secondary invasion of the heart valves takes place from some zone of chronic infection in the alimentary tract. Here streptococcus viridans has been isolated from the blood stream. A case is reported associated with streptococcus longus in stool. Under treatment with autogenous vaccine the condition cleared up.

J. ROSE.

GOODALL, E., AND SCHOLBERG, H. A.: A Note on the Diastase-Content of the Urine in 120 Cases of Mental Disorder. *The Journal of Mental Science*, 1922, lxxviii, p. 1.

According to MacKenzie Wallis a high diastase value of the urine

is in favor of pancreatic disease, whereas, with a normal pancreas, normal or low values are obtained.

The method adopted in this inquiry was that of Wohlgemuth, in accordance with which varying strengths of urine are added to a given amount of starch, and the mixture digested for thirty minutes at body-heat.

Diet made no difference in results.

There were 120 cases of mental disorder examined. In respect of general bodily condition 81 were good, 11 fairly good, and 28 in reduced condition.

Out of 120 cases there was no evidence, excluding one possible case of pancreatic disease as indicated by the urinary-diastase test.

The average 24-hour urine amounts for normal persons was 43 oz. as against 25 oz. in the mental cases.

**POMARET, M.: Experimental Basis of the Arsenotherapy of Syphilis by the Intramuscular Route.** *Presse medicale*, 1922, xxx. p. 124.

Since its introduction into therapy arsenobenzol has been used by the intramuscular route, now comes the intravenous route. Ehrlich concluded in 1911 that the intramuscular injection seemed to give the most decisive and lasting results. But with "606", this route was speedily abandoned on account of the local reactions and even necroses which followed the injections of this product whether in acid or alkaline solution.

**PICKERILL AND WHITE, J. R.: The Tube Skin-flap in Plastic Surgery.** *British Journal Surgery*, 1922, ix, p. 321.

The tube-flap in plastic facial surgery is used to convey tissue to the face from the chest, neck, scalp or forehead in a viable condition. It has the obvious advantage—besides that of almost certain vitality—of avoiding additional scars on the face. A neck tube-flap is fashioned as follows:

Two parallel incisions are made along the line of the sternomastoid about 2 inches apart. The skin, subcutaneous tissue, and platysma are then dissected off the sternomastoid, thus forming a broad flat flap. The two edges of the flap are now brought together,



with the skin surface outwards, and sutured accurately, thus forming a "tube". The skin margins of the wound are then freely undermined and brought together, leaving the "tube" hanging free for the greater part of its length, but united to the neck at its upper and lower ends. After about a fortnight the lower end of the tube, with or without any additional flat flap, is divided, swung up to the face, and inserted accurately in its prepared bed. At the end of 10 days the tube is divided at its distal end and opened out flat again. The scar in the neck is excised and the flap reinserted into the neck; thus the only tissue ultimately lost from the neck is from the lower end near or below the clavicle. This area, if large can always be skin-grafted, and in any case is in a favorable situation. Should the tube not be long enough for its original intention (indeed it may sometimes with advantage be purposely made short) it may be "caterpillared" into place. To accomplish this, the lower end of the tube is divided, swung upwards, and inserted into a small prepared bed as high up as possible. At the end of 10 days this process is repeated. The lower (original proximal) end being divided, swung up, and in turn inserted in a small prepared bed and so on until the desired situation is reached. Small adventitious blood-vessels develop into the ends of such "caterpillared" tubes with astonishing rapidity. A certain allowance has to be made for shrinkage in length of all tube-grafts, but given absolute asepsis, this should not amount to more than one-sixth. When the tube form is itself used for the graft and not merely as a carrier of nourishment it may be called a tube graft. Such tube grafts are particularly useful in the restoration of lips and the repair of palatal defects, or any similar situation. The technic of the operation is the same except that the tube is allowed to "hang" at least a fortnight, by when it becomes slightly congested and acquires a rose flush, which when it is grafted into position to form a lip, it never loses. Incredible as it may appear, it is nevertheless quite true that it is very difficult to tell afterwards which is the mucous membrane lip and which skin. The double tube flap is particularly useful in chin and cheek restorations, or in the closure of any hollow viscus which requires an epithelial lining. It consists essentially of a tube-flap of plain smooth skin formed from the neck, swung upwards and adapted to the defect with its skin surface inwards towards the mouth and its raw surface outwards. Immediately, and at the same operation of course, another tube-flap is fashioned

from elsewhere, the scalp, for instance, and turned down to lie over the first flap, to which it is accurately adapted. Ten days afterwards both tubes are divided, and returned to their respective original positions.

**WILLIAMS, W. T.: Intravenous Injection of a New Mercurial in Treatment of Syphilis.** *Canadian Medical Association Journal*, 1922, ii, 401.

Mercurosal is said to be a synthetic compound derived from mercuric acetate and salicylacetic acid and to contain about 44 per cent of metallic mercury by weight. It is put up in the form of powder in sealed tubes, each containing 0.1 gram and 0.05 gram Mercurosal. It is very easily soluble in water and the author's method has been to dissolve 0.1 gram in 50 c. c. distilled water (sterile) and inject intravenously twice or three times weekly, depending on the toleration of the patient, from ten to twenty injections as a course. The advantage of the intravenous over the intramuscular form of treatment is that it is painless, does not leave any disagreeable after effects, absolute accuracy of dosage, and can be continued until after the patient is sufficiently saturated. Everyone knows how frequently intramuscular injections have to be abandoned on account of pain, and if not properly given on account of abscess formations and occasionally such accidents as broken needles caused by the patient suddenly contracting his muscles at the same moment the injection is given.

**MOORE, J.: Treatment of Psoriasis by Manganese.** *British Medical Journal*, July 8, 1922, No. 3210, p. 41.

In 1920 while treating with vaccine 2 cases of staphylococcic infection, who also had psoriasis, it was noted after 6 injections of vaccine that the skin in the regions with psoriasis was markedly improved. There was, however, little further improvement with 6 more injections, and considering the improvement which staphylococcic infections had shown with intramuscular injections of collosol manganese, this was tried. In 4 injections, one of the cases was entirely cured. Since then 35 cases of psoriasis have been treated with intramuscular injections of ~~collosol~~ colloidal manganese, and all have been remark-



ably improved or cured. It is concluded, that mixed staphylococcic vaccine will improve the lesions but will not bring about their complete disappearance. Collosal manganese will clear up the lesions in from 6 to 16 injections, without the assistance of any external applications except vaseline if there is much irritation. It is probable that psoriasis is due to a special staphylococcus or at least bears an intimate relationship to chronic staphylococcic infection. This disease is perhaps auto-inoculable, and a number of cases in the same family can be accounted for by living under the same conditions, and subject to the same infection, rather than by heredity. The clinical appearance of psoriasis suggests a spirochaetal origin, but neither salvarsan, its congeners, nor mercury have any beneficial effect on the disease. The only specific treatment up to the present has been the use externally of chrysophanic ointment.

L. C. JOHNSON.

STRASSEN, O.: **Intravenous Injection of Trypaflavin in Chronic Urticaria** (Intravenöse Trypaflavinbehandlung der chronischen Urtikaris). *Medizinische Klinik*, 1922, xviii, 597.

The author got his inspiration from an article written by R. Stephan, in *Medizinische Klinik*, 1921, who used trypaflavin for a bactericide. He also used it for a tonic, for the mesodermal tissues. Therefore, the author tried it in chronic urticaria, in 3 cases. They had been suffering for several weeks to 6 months. Twelve to 15 c. cm. of .25 per cent solution in distilled water were injected with intermissions of 2 to 3 days. After 2 to 4 injections, all symptoms disappeared. These cases have been observed for from 2 weeks to 2 months. He asks other physicians to try this method.

GIBSON, M. M.: **The Treatment of Gonorrhea in The Male in General Practice.** *Medical Journal of Australia*, 1922, i, p. 34.

Absolute rest in bed during the first week, with proper hygiene; careful diet, with elimination from bowels and kidneys kept up, using *Mistura potassii citratis cum buchu*, and if secondary infections, antiseptic drugs, hexamin, salol, etc. Antiphlogistic treatment of hot Sitz baths is most useful in the acute stages.

**Vaccine.**—Heretofore, vaccines have not been uniformly successful because they were used in dosage too small to do much good. The author recommends Thomson's detoxicated vaccine, which gives very favorable results, especially in acute conditions, and if used as a routine, complications are less frequent and if occurring less severe. He makes his detoxicated vaccine of a strength of 10,000 millions per cubic centimeter, including about 20 strains of the organisms. Three injections are given intramuscularly at intervals of 4 days. The first day 5,000 millions; the fifth day, 10,000 millions; ninth day, 10,000 millions. This gives a strong reaction by the complement-fixation test. If reaction is not produced, the prognosis is bad.

The local treatment includes irrigations or injections of silver nitrate 1:10,000, at temperature of 32° to 38° C. Toward the end of the acute stage, in the third week, there should be gentle massage of the prostate gland, seminal vesicles, and Cowper's glands. Finally, before the patient is discharged, the urethra should be dilated by curved metal sounds, to be repeated in 5 days.

**KOLMER, J. A.:** **The Nature of the Tuberculin Reaction and Its Use in the Diagnosis and Treatment of Tuberculosis.** *The Therapeutic Gazette*, 1922, xlvi, 381.

Koch's tuberculin reactions are of an allergic nature; injected into perfectly healthy infants in dosage as large as 1 c. c. at close intervals over a long period, caused no ill-effects, but the injection of one-millionth of 1 c. c. may make a tuberculous adult ill. For the tuberculous, tuberculin acts like a virulent poison; for the non-tuberculous, it is relatively inert. The author explains the theory of anaphylaxis and the production of allergen.

**Diagnostic Value of Tuberculin Reaction.**—The tuberculin reaction is highly diagnostic in the sense that it is specific. The local skin-mucous membrane reactions, when positive, indicate that the person is tuberculous or has been cured in a clinical sense. It does not indicate the location of the lesion. Sensitization in clinically cured cases gradually decreases and may even become extinct; but it rapidly increases during exacerbations of the disease, and persistently strong reactions point to presence of tubercles, even if they may not be clinically detected and the general health of the patient is



good. Sometimes these tubercles are healed in a clinical sense. They may be well-fibrosed and nothing remain but a scar.

Positive tuberculin reactions are of special value in the diagnosis of tuberculosis in children. Their value decreases with advancing years because so many adults acquire lesions which are sufficient for sensitization, but show no ill-effects and often recover therefrom.

The tuberculin reaction may be negative in advanced and acute tuberculosis, because the patient is desensitized by absorption of tuberculin produced in the foci. Reactions may become negative during a course of tuberculin immunization; or, because there is sufficient fibrous tissue about foci to prevent absorption of the foci poisons.

*Curative value of Tuberculin.*—Kraus believed that tuberculin given in proper doses with proper spacings of injections causes a series of mild allergic shocks about the focus of the disease; later this is followed by a fibrosis with walling-off of the disease. The author agrees with Kraus, but emphasizes that the doses must be small enough and so spaced that the reaction is mild but more or less continuous. It has potency not only for good but for harm. Patience and skill are required to judge the correct dose. The degree of constitutional effects should be slight, with but a degree or two or fever and minor other effects. It may be used in the treatment of cases of tuberculosis of a chronic and localized character.

SOLOMON, H. C.: **Remarks on the Clinical Interpretation on the Wassermann Reaction.** *Rhode Island Medical Journal*, 1922, v, 242.

The Wassermann test should not be made in the presence of acute infections, but if it is properly performed it is a good evidence of syphilis if it is strongly positive. The technic should have a proper degree of sensitivity; the more sensitive the antigen used, the higher the number of positive results. In any good laboratory, false negative and false positive are very infrequent, but they are always possible.

A study of the reports of two laboratories on the blood sera of 3,000 patients, showed complete uniformity in findings, in 93.44 per cent; 6.56 per cent included cases reported as doubtful, leaving a percentage of variation of 4. This was 1.4 per cent positive in one

laboratory and 2.6 positive in the other laboratory. Some cases reported positive by one and negative by the other were known to be syphilitic, showing that the negative reaction was incorrect. This percentage variation is based on only one test. Repetitions brought about the uniformity of findings in most of the cases. This indicates that occasional error may creep in, according to the technic used, and this error can be corrected by having more than one laboratory test, since variation in the reports of two laboratories are quite significant.

However, the final interpretation of the result should lie entirely with the clinician. If the Wassermann is reported negative, the clinician should either say, "so much the worse for the test", or have it repeated. This is especially essential in cases which show no evidence of syphilis clinically, and yet have their positive reaction; the report should be confirmed by a second, or even a third test. Neither should one negative reaction be considered as excluding syphilis, but the test should be repeated.

The Wassermann reaction is of value in following the progress of the disease during treatment, but there are three points to consider: the negative Wassermann reaction does not mean the cure of the disease; the negative Wassermann with one technic may be positive if performed by another; then there are a number of late cases that will never become Wassermann free, although patients are in good health; a reaction, becoming negative under treatment, may later become positive after treatment is stopped. It occasionally happens that a strongly positive Wassermann may become negative after one or two injections of arsphenamin, however they are usually fairly reliable.

He summarizes by stating that a consistently positive Wassermann reaction is evidence of syphilis in a patient, if there is absence of acute febrile conditions.

The technic used is of importance, as the more sensitive the antigen, the greater percentage of positive results.

The value of provocative Wassermann reaction is questionable. The same result may be obtained by several repetitions of the test.

EINHORN, M.: **Recognition and Treatment of Minor Ailments of the Digestive System.** *New York Medical Journal*, 1922, cxv, 681.

Acute gastritis is indicated by retching and vomiting, anorexia, and a feeling of fulness and tenderness to pressure over region of the



stomach. Acute duodenal catarrh shows sensitiveness in the right upper abdomen, and may be accompanied by jaundice. Acute cholecystitis shows a tenderness in the region of the liver and beneath it, with some swelling of the liver, and pain when breathing deeply. Acute hepatitis shows enlarged and tender liver. Acute enteritis may have symptoms of cramps over the abdomen, slight nausea, frequent diarrhea, and tenderness to pressure in lower abdomen. Acute colitis has tenderness over the large bowel, cramps, constipation with mucus, and sometimes blood in the stools. Acute appendicitis has many of these other symptoms and tenderness over McBurney's point.

*Treatment.*—In acute indigestion, with loss of appetite and vomiting, the indications are to keep food away from the stomach, and establish the desired rest. The vomiting rids the organ of undesirable material. The rule is not to interfere too much.

In chronic conditions of the digestive tract, as hyperchlorhydria, subacidity, nervous dyspepsia, nervous regurgitation, anorexia, sitophobia, and habitual constipation. The diagnosis is of first importance. It is necessary to exclude organic lesions. He would do this in the following way:

(1) Conditions going on for a long time with the same symptoms, which do not change or grow worse, are due to functional disturbances.

(2) Ailments showing changes in subjective symptoms, but after a long time showing no change in the objective space, are generally neuroses.

(3) Diseases lasting for 2 months, progressing in severity and showing patient changing from healthy to sickly appearance, are organic in type, and often malignant.

(4) Digestive disturbances, persisting for some time, with free intervals, though reappearing in severer form, are often due to benign organic lesions.

Functional and neurotic disturbances are treated by good hygienic living and correction of any abnormal states. Many of these disturbances are due to improper ways of living, such as too fast eating, too many condiments, alcohol, tobacco, too great mental strain or anxiety, or to physical over-exertion; may also come from the opposite state, or are due to reflex states from distant organs, such as eye-strain, usually stigmatism, appendicitis, gall-bladder lesions, and uterine disorders. The amount of food should not be too much nor too lit-

tle. The work should not have too much fatigue. There should be sufficient periods of rest, sleep, and freedom from mental strain. There should not be too many courses with one meal. In hyperchlorhydria, there should be abundance of butter, eggs, milk, and vegetables, but a small amount of meat, and avoidance of spices and acids. The medication consists of sodium bicarbonate, magnesium, kaolin, neutralon, bismuth and calcium are also beneficial. In subacidity, hydrochloric acid may be given for short periods of time, while stomachics, as nux vomica, gentian, condurango, quassia and chinchona, may be given for longer periods of time.

The treatment of habit neuroses requires systematic suppression of the faulty habit. Ructus or aerophagia are combatted by having the patient avoid belching, even when he feels uncomfortable. A regurgitation of food must be suppressed by the patient. Any dietary regime in these cases is of no advantage. Nerve sedatives are of no benefit.

MARIE, A., AND FOURCADE, M.: **Note Concerning the Treatment of Nervous Syphilis with the Tartrobismuthate of Sodium and of Potassium.** (Note concernant le traitement des syphilis nerveuses par le tartrobismuthate de sonde et de potasse). *Ann. de l'inst. Pasteur*, 1922, xxxvi, p. 34.

The authors treated 20 cases of nervous syphilis with tartrobismuthate of sodium and of potassium; 10 cases of classical general paralysis in men of 36 to 46 years, very advanced cases arrived at the third stage; 10 cases of syphilis of the nervous centers of the spinal cord, cerebral gummas, arterites, transverse myelites, tabeto-P. G., pseudo P. G. and demented states of cerebral syphilis. The technic was the same; 11½ c. c. in intramuscular injections every 5 days until after 20 injections, which represents about 3 grains of the salt for each patient. In general paralytics whose condition was very poor the dose was reduced by one-half the amount. The results seemed to be absolutely nil for general paralytics whose cases were fully developed when treatment was begun. In delirious dementias the result seemed more striking and one patient seems to have drawn a real benefit. In simple dementia, the physical condition was improved, particularly the paraplegic phenomena, at the same time the



intellectual weakening seemed to retrogress. The Bordet-Wassermann reaction in the cerebrospinal fluid was not influenced in any case.

The gummas of the nervous centers, the arterites and some neurites appear to be rapidly influenced. There seems to be a contrast between pure general paralytics and other old syphilis of the nervous centers. Bismuth seems to act in a similar manner to novarsenobenzol and mercury; it does not seem to change the Bordet-Wassermann of the cerebrospinal fluid although it manifestly improves the blood Wassermann.

This impression of less vulnerability of the neurotropic spirochete of general paralysis to bismuth should not discourage a prolonged trial of this treatment. These first applications of the treatment did not give decisive results in diffuse perimeningo-encephalitis. It remains to attempt the bismuth treatment in the preparalytic period and in ascending tabes, in a period of the disease and under conditions in which one may hope to reach the spirochete before it has forced the cerebral defenses and worked irreparable destruction. This is rather the prophylaxis of general paralysis than its treatment. Two observations of syphilis of the nervous centers are sketched.

GORDON, A. H.: **The Treatment of Chronic Nephritis.** *Canadian Medical Journal*, 1922, xii, 32.

The author divides the nephritides into: (1) Postural albuminuria, and residual albuminuria after acute nephritis, and idiopathic conditions where there is nothing but casts and albumin as the only evidence of impairment; this includes a large group of cases. The treatment of these is safeguarding only; with the avoidance of severe strains of the body, over-eating, and also of consumption of creatinin in soups, meat extracts, etc., and the abuse of alcohol and condiments, and also the avoidance of excessive salt intake.

(2) Albuminuria with hypertension and slight subjective symptoms. Treatment to be much the same as that of the first, with avoidance of blood-pressure raising influences, rest in the middle of the day, with discontinuance of business rarely. Exercise is permitted: physiological economy in nutrition, limitation of the salt and fluid intake; if possible residence in a warm climate for the winter.

(3) Hypertension with outspoken myocardial insufficiency, the usual common type of chronic nephritis, present the problem of treatment of circulatory disease, and require both the safe guarding and symptomatic treatment. Tendency is to retain salt and form edema. The nephritic test meal and the phenolphthalein are needed to differentiate the purely cardiac from the essentially renal types and symptoms. Effective digitalization is needed to overcome the auricular fibrillation and the edema with the congested liver. Following the Mosenthal test meal, if the kidney is contracted the two-hour specimens tend to keep constant at a low level, and the nitrogen concentration of the urine will be lessened. In chlorid retention the chlorid intake is cut down and the water is limited; if the blood nitrogen is high, the protein intake is limited to about 30 grams daily of N. The Karell diet, the administration of 800 c. c. of milk as the total daily intake, is an ideal method to accomplish this.

(4) General edema with no myocardial insufficiency of note, as is found in protracted acute nephritis of good prognosis, amyloid disease, and degenerative affections of the tubular epithelium; all show marked salt retention, though otherwise the output of nitrogen is normal. Treatment is by purgation, sweat baths, and radical salt restriction. Some may pass into the next.

(5) Advanced renal insufficiency with uremic symptoms; also retinal changes of the specific gravity at a low level; both the salt and the nitrogen are reduced; the phenolphthalein test from low readings to mere traces, and the Ambard coefficient is uniformly high. Treatment of the severest type is purely symptomatic. The distress of the respiration is relieved with chloral with or without bromids, but for many morphin only will be effective. Patients should be encouraged to sit up, and a vasodilator at bed time is useful. Diet is limited by patient's incapacity to take food; bleeding followed by transfusion has been followed by symptomatic improvement. For convulsions, bleeding of 500 to 600 c. c. is indicated. Surgical treatment seemed to give good results in 2 cases by decapsulation, but failure in many others.

Christian aims to do three things:

(1) To stay the progress of the lesion, by removal of all foci of infection, and decrease renal work by the above.

(2) To remove edema by increasing elimination with limitation of the salt and water intake.



(3) Prevents toxic effects by low protein feeding and elimination through purgation, sweating, by diuresis and mechanically by bleeding.

*Prophylaxis.*—Treatment consists in caring for patient with tonsillitis, and looking after abscessed teeth, and by keeping patients from becoming over-weight.

Epstein describes a type of renal edema or nephrosis, which is generative in character, showing absence of cardiovascular changes and normal blood-pressure, with a large amount of albumin in the urine, with or without casts, and a change in the protein formula of the blood (serum globulin being  $\frac{3}{4}$ ths instead of  $\frac{1}{3}$ rd of the total, and albumin dropping from  $\frac{2}{3}$ rds to  $\frac{1}{3}$ rd, while the blood lipoids are greatly increased). The osmotic pressure from the tissues towards the blood, is diminished, and edema results. This is due to the lowered blood proteid. The treatment consists in cutting down the fats in the diet, raising the protein and restricting the carbohydrates. A diet of 2500 calories, contained 240 grams of protein, 40 grams of fats, and 300 grams of carbohydrates, for a patient weighing 150 pounds. This diet brought rapid and permanent relief of the edema.

DUFOUR, H., ET FERRIER, L.: Subacute Inguinal Adenitis with Purulent Intraganglionic foci. Lymphogranulomatosis. Cure with Emetin Hydrochlorate and Tincture of Iodin (Adenite inguinale subaigue a foyers purulents intraganglionnaires. Lymphogranulomatose. Guérison par le chlorhydrate d'emetine et le teinture d'ode). *Bulletin et Mem. Soc. med. d. Hop. de Paris*, 1922, xxxviii, 452.

Recently, Ravant praised the treatment of subacute inguinal lymphogranulomatosis by intravenous injections of emetin hydrochlorate. The case here reported is that of a man of 28 years, an old syphilitic treated energetically, with a negative Bordet-Wassermann, and who had also had malaria. For 2 months he had been treated without result for a painful affection of the inguinal ganglions of the right side, characterized by small multiple abscesses in formation, or already opened, whose origin was in the ganglions of the anal fold. The pus of these abscesses was white, milky, viscous, containing no microbes, nor ameba, and not infecting guinea-pigs with

tuberculosis. For the space of 50 days, this patient received 17 injections of emetin hydrochlorate, at first subcutaneously, then intravenously in doses of 4 to 6 and 8 centigrams of emetin hydrochlorate diluted in 10 c. c. of artificial serum. For 30 days he ingested daily 50 to 80 drops of tincture of iodine mixed with milk. At the end of this treatment the patient left the hospital completely cured, showing only some indurations of the ganglions primarily affected. The two drugs were not used simultaneously, but successively and each seemed to contribute a favorable influence, the tincture of iodine having been substituted for emetin hydrochlorate at a time when the saturation with the latter had been reached. As to the nature of the disease, the tests do not speak for a tuberculous origin, nor for an amebic origin, nor for a genital origin. The cause is not evident. In a case of this sort, one is always right to suspect a larval tuberculosis.

CARPENTER, G. A.: **Malignant Disease of the Rectum and Sigmoid, with a Plea for an Early Diagnosis.** *Journal-Lancet*, 1922, xlii, 4.

Mortality from operation of the rectum and sigmoid show a greater percentage of cures during the past few years, due to more perfect technic and to earlier operation. Recurrences are less when operation is followed by x-ray or radium. The development and metastases of cancer in this region is much slower, and the symptoms not so marked as when the disease appears higher up. The patient is well-nourished and no cachexia evidence is seen early.

The author urges early examination when symptoms point to diseased conditions of the rectum or sigmoid. Statistics show that 18 per cent of cancer of the intestine show in the rectum, most commonly 3 or 4 inches from the outlet, while Gant states that in a series of 100 cancers of the rectum and sigmoid, 5 per cent were located at the anal margin, 10 per cent in the anal canal, 50 per cent in the ampulla, 20 per cent in the upper part of the rectum, and 15 per cent in the recto-sigmoidal area.

*Examination.*—Patient should be in the knee-chest position. The physician uses the proctoscope and sigmoidoscope with the pneumatic attachment if the rectum does not balloon out. With proper light a clear view of the field may be obtained. The rectal speculum should



never be used, as it obscures the field and causes much pain. Patient should never be allowed to make his own diagnosis. Proper treatment of pathological conditions in this region may prevent development of malignancy, while an early diagnosis of malignant troubles will insure a successful operation.

*Symptoms.*—The symptoms are so varied in malignant disease of this region that they should not be relied upon to make a diagnosis. Whenever a patient complains of any condition in this region, which leads the doctor to believe there is some abnormality present, a thorough examination should be made.

In the discussion, Dr. Gerrish stated that cancer of the lower rectum may be diagnosed with the finger, with a characteristic feel of alternating hard and soft areas, in cancer of the bowel. However, no general examination should be considered complete, without a procto-sigmoidoscopic examination. Pain, cachexia, and loss of weight are all later symptoms. The earliest symptom will be hemorrhage from the bowel. When seen in examination as little streaks of dark, bloody mucous, and an open hemorrhoidal vein cannot be found, the doctor may be sure that it is due to a cancer higher up.

Treatment may include resection of the bowel, removing the rectum and, if necessary, a portion of the sigmoid, with dissection, thus getting rid of the cancer process. Metastases occur very late.

Doctor Quain stated that old, inoperable cancer, causing pain and restlessness, can be controlled by radium and x-ray, and thus obviate the use of morphin, causing the cancer patient to become an addict. Selenium and calcium salts have been used through injection with success. For instance, calcium chlorid was injected in sufficient amount to produce fixation abscess, softening the cancer and relieving the cancer pain. This relief may be temporary, but it is worth while trying. Local anesthetics may be injected, depending upon the location of the malignant growth, also severing the nerve trunk supplying the areas has been suggested. Any or all of these measures should be used before patient is morphinized.

Dr. Sweetser suggests that the pain of cancer is due to the passage of the feces over the ulcerated area. This can be overcome by a permanent colostomy in inoperable cases, thus obviating the use of morphin. This colostomy should be made through the fibers of the rectus muscle, which furnishes a sphincter for the outlet. This allows the patients to go anywhere and attend to their work. He has

had patients who have gone in this condition for 3 years before death, doing as they wish. If pain still continues after colostomy, he cuts the posterior root of the posterior sensory nerves. This does not cause any change in function, but loss of sensation only.

**OTT, L.: Rheumatism. Arthritic Conditions and an Effective Remedy.**  
*American Physician*, 1922, xxvii, 573.

Rheumatic conditions of the joints with nodes, distortions, inflammations, ankylosis, and destruction of articular elements are apparently due to many causes, or combination of causes, which require further examination and study to determine the etiology. The author believes that its etiology is largely infectious, secondarily affected by minor traumatism, which produce a low grade of irritation. This is seen in the small joints of the index finger especially, where they are frequently susceptible to slight trauma. In these places, the initial ossific developments are found.

*Diagnosis.*—In arthritis deformans the diagnosis is easily made in advanced states, but in the beginning, a positive diagnosis is made when there is crepitation, enlargement, and beginning nodules, with pigmentation and glossiness of the skin. There may be quiescent stages in the progress of the disease. The cases are found in morbid states of the blood, known as gout. There is a marked symmetry of the joints involved, and usually the smaller joints are affected first. These cases often suffer from neuralgias, neuritis, and myositis, which are caused by toxins and morbid states of the blood.

*Treatment.*—The author states that in the chemical composition of acyl-methylene-disalicyclic acid compound, there is a real reagent destructive to the rheumatic poisoning. This compound is known as dibenzyl-diethyl-methylene-disalicyclic-dipyruvic acid. It is given in dosage of 30 grains every 3 hours in adult cases, and the treatment is kept up until there is great improvement in the joints. It is used in conjunction with massage and general motion. Children are equally benefitted, and they are given proportionally large dosage. This medicine has not only the power for relieving pain, but causes a rapid subsidence of the swelling and fever, with the cutting short of the attacks. There is no ill influence on the heart or heart action. When the bowels are affected by it, subgallate of bismuth was given in 20 grain dosage every 3 hours, until the system could take the



compound without annoyance. It is a systemic antiseptic, especially for the intestinal tract; it increases peristalsis and may be purgative in large doses.

*Indications.*—It is useful in both acute and chronic arthritis deformans, inflammatory rheumatism, acute gout, and eczema of rheumatic origin. It has been used over prolonged periods in chronic cases without injury to the human organism, and removes from the system some of the defects of the faulty metabolism.

*Case.*—Woman, aged 54 years, whose foot had become almost ankylosed by uratic deposits about the joints, also left knee was painful on motion and pressure, with swelling and crepitation. In 2 weeks, with this compound, combined with salt baths and colonic flushing, with graded exercise, there were gratifying results. In 6 weeks much of the deposits have been absorbed, with increased articulation. In 2 months the major degree of flexibility of the foot had returned. He gives the case history of others of a similar nature.

HARTMANN, H.: **Inflammatory Strictures of the Rectum.** *The Lancet*, 1922, cccii, p. 307.

*Etiology.*—Inflammatory strictures are fairly rare; 86 cases only noted in author's experience; women more subject than men. Poelchen, in a series of 215 cases, 190 were women, and 25 men. Carre, in a series of 266 cases, found 210 women, and 56 men. In the author's series of 86 cases, 50 were women, and 36 men. The age runs from 20 to 60, with the great majority in the third decade. Syphilis was found in 34.8 per cent of the author's cases, some of which occurred before the Wassermann reaction was known, consequently the real percentage probably is higher. Allingham found that 50 per cent gave a history of syphilis. Tuberculosis is found in 10 cases in a series of 86. Gonorrheal infections and pederasty are found frequently among other causes. Chronic inflammations of the uterus, with infiltrations along lymphatic vessels about the rectum is given as a cause by Goodsall and Miles; the author does not agree with their findings, which he believes can be explained by gonorrheal infection, with ano-proctitis or anal ulceration. Dysentery was a cause in one case in the series of 86. Leprosy may also be a starting point of stricture. Hemorrhoids and chronic constipation, he does not believe enter the problem.

*Pathology.*—It is usually found 2 to 6 centimeters above the anus, occurred in 77 of the 86 cases; twice from 8 to 10 centimeters above the anus; once in the middle part of the ampulla, and once in its upper part. Three cases showed a stricture extending the whole length of the rectum, and one even reached the lower part of the pelvic colon. One case had two overlying strictures at 4 and 12 centimeters above anus. Usually cylindrically shaped, resembling circular pessary, surrounded above and below by inflammatory structure; hardly ever ulcerated, lesions lying especially in the submucous layer; muscular layers are also invaded. Mucous membrane is thickened, may show granulations, or even small lumps, sometimes papillomatous. When proliferations are extensive it is called proliferative and stenosed proctitis.

*Symptoms.*—During a latent period the stricture develops slowly, although there may be symptoms of proctitis as rectal fulness, with painful discharge of muco-pus or pus. When stricture is established, movements are difficult and infrequent, bowel being moved only every 2 to 5 days. Suppuration varies in abundance. Discharge irritates surrounding parts causing erythematous eruption. May be entirely purulent, and simulate intra-anal abscess. Because of the stricture, the patients have abdominal distention, and colicky pains. The obstruction rarely is complete. The author did not have one case in his series. Patient loses weight and strength, is cachectic, or may have intercurrent disease, as tuberculosis.

*Diagnosis.*—It is made by digital examination, which finds anal mucous membrane, rough, dry and uneven, with columnar thickenings; the stricture, at the upper border of the lesions, has a funnel-like form. It is from 1 to 3 centimeters long, and shows a thickening of the wall. Proctoscopy does not reveal as much as digital examination, but shows mucous membrane, red and uneven, sometimes with vegetations and small ulcers. The stricture is a gray color. Fistula were found in 28 out of the 86 cases.

*Duration.*—Life may be prolonged 8 to 15 years by correct treatment.

*Treatment.*—Even with syphilitic patients, specific treatment has no effect on the stricture. Dilatation is the usual treatment; must be done with gentleness, by selected bougies, which pass through the stricture without force and without pain. The author uses woven bougies covered with gum, two or three to be introduced each time,



repeat every other day, increasing with one or two larger sizes. Each bougie should be left in place a few seconds only; when sufficient size has been reached, treatment should continue once a week. This treatment never cures the disease.

*Surgical Treatment.*—This includes complete extirpation of the diseased region, where the lesions are limited to the termination of the rectum. The author has obtained permanent cures in these cases. Intra-sphincteric amputation, similar to Whitehead's operation for hemorrhoids, is begun by a dissection of the region surrounding the anal canal with a bistoury. The finger then isolates the part, strips it up, to bring down the upper end and to stitch it to the skin. It is necessary to dissect very high, and open the peritoneal pre-rectal culdesac, in some cases. Small drainage tubes are placed in between the sutures. More recently, he made a counter opening in the posterior part of one of the ichio-rectal fossæ, inserting two drainage tubes in the form of a V, placed obliquely in the front to reach the lateral parts of the detached rectum. This has brought better results in the more recent operations.

Excision of the rectum is nearly always a palliative operation. He has operated in this way on 34 cases with 32 cures. He has twice been obliged to form an abdomino-perineal excision, because of stricture reaching inferior half of the pelvic colon; results one cure and one death.

Fistule should be incised and curetted, when they are found; combining the excision of the rectum with the curetting and incision of the fistule. Usually simply prolonging the incision of the rectal wall just above the stricture, he performs an autoplasmic proctotomy by bringing down the superior angle of the rectal incision to stitch it to the skin.

In extensive suppuration, with a grave condition, iliac colostomy is indicated. He cites a series of 17 colostomies and 16 cures; one patient died of broncho-pneumonia. He does not advise internal proctotomy as it leads to hemorrhage and sepsis, but he does advise combining different methods of treatment, and employing perineal excision of the rectum, and colostomy, thus prolonging life and relieving the patients.

## SECTION ON LABORATORY AND RESEARCH

JONES, W. H.: **Urine Examination as an Index of Renal Disease.**  
*New York Medical Journal*, May 3, 1922, cxv, No. 9, p. 531.

The ordinary urine examination may lead to erroneous conclusions regarding renal conditions. Many cases of nephritis although functionally and symptomatically improved may show casts and albumin months after discharge from the hospital. Many patients with severe grades of nephritis pass urine that at intervals is negative or nearly so. A urine of continued low specific gravity is of more importance than one of high specific gravity, even though other urinary signs of disease are present.

The presence of abnormal urinary findings should serve as a signal for further investigation of the renal status. The two hour fixation specific gravity test, the phthalein and the estimation of the volume ratio of day and night urine are simple functional tests that can be performed with little inconvenience to the physician or the patient. In order to gain a satisfactory estimate of renal disease one must carefully consider the results of urine examinations, those obtained from the performance of functional tests and the symptoms and signs presented by the patient.

J. ROSE.

PEMBERTON, H. S.: **The Diagnostic Value of Gastric Fractional Test Meals.** *British Medical Journal*, July 1, 1922, No. 3209, p. 7.

The rate and nature of the secretion of the stomach depend upon the amount of chemical or psychic stimulus brought to bear upon the stomach mucosa. The rate of evacuation of the stomach has to do



with the shape of the curve, late, when the pylorus is opened sufficiently. Neutralization or dilution brought about by regurgitation from the intestine is another factor which will influence the shape of the curve. If  $C$  represent any point on the total acidity curve,  $S$  the rate of gastric secretion,  $E$  the rate of evacuation, and  $R$  the rate of intestinal regurgitation, then it would appear that  $C$  varies directly as  $S$  and indirectly as  $E$  and  $R$ , or,  $C$  varies as  $\frac{S}{E \text{ and } R}$ . This relation is not exact, but an attempt has been made to analyze the curves of over 200 fractional test meals, and to interpret the shape and significance of the curve by reference to this expression.

The conclusions are made: (1) The acidity curves plotted from fractional test meals are of some value in obtaining knowledge of the factors which modify the acidity.

(2) Alterations in these factors bear some sort of relation to gastro-intestinal lesions; hence the acidity curves may throw some light on these lesions.

(3) These curves seem divisible into at least six types of varying diagnostic value.

(4) By comparison with other methods the fractional test meal is at least admissible as an aid to diagnosis.

L. C. JOHNSON.

HAMMETT, F. S., MULLER, J. M., AND NOWREY, J. E.: **The Relative Toxicity of Germanium and Arsenic for the Albino Rat.** *Journal of Pharmacology and Experimental Therapeutics*, May, 1922, xix, No. 4, p. 337.

A comparison of the relative toxicity of germanium dioxide and arsenic trioxid for the albino rats shows that the former can be administered subcutaneously in doses up to 180 mgm. per kilo of body weight of the experiment—animal with no apparent harmful effects. The latter usually produces a fatal result when similarly given to mature non-pregnant animals in the ratio of 8 mgm. per kilo of body weight. Moreover, the injection of arsenic trioxid solutions is followed by marked necrosis and sloughing at the point of injection, which phenomena are not sequels of the injection of germanium dioxide solutions. It is, therefore, evident that germanium does not possess the toxicity for the living organism such as is exhibited by arsenic. It would appear from these results that the albino rat is more re-

sistant to poisoning by arsenic than is man. Correlated data indicate that this difference is due to the difference in the degree of the protein metabolism of the two species.

C. A. SCHMID.

SALANT, W., AND KLEITMAN, N.: **Some Observations on the Action of Mercury.** *The Journal of Pharmacology and Experimental Therapeutics*, May, 1922, xix, No. 4, p. 315.

The intravenous injection of the acetone succinate and benzoate of mercury into cats, dogs and rabbits, produced a sudden fall in blood-pressure which was very marked and persistent. Depression and later paralysis of respiration also occurred.

(1) Cardiac inhibition was produced by the intravenous injection of the salts of mercury in cats, but not in dogs or in rabbits.

(2) Decreased irritability of the vagus was observed in cats after the intravenous injection of the organic salts of mercury.

(3) That the fall in blood-pressure after mercury was of cardiac origin was shown by observations on changes in the volume of the kidney.

(4) Perfusion of the turtle heart with the different salts of mercury produced cardiac depression, irregularity and delirium cordis. Concentration of one part of mercury to one million parts of Ringer's solution, and even one to ten million, were effective.

(5) The frog heart was more resistant to mercury than the turtle heart. No delirium cordis was observed. The action of mercury was cumulative.

C. A. SCHMID.

SALANT, W., AND KLEITMAN, N.: **Pharmacological Studies on Acetone.** *Journal of Pharmacology and Experimental Therapeutics*, May, 1922, xxx, No. 4, p. 293.

Acetone possesses a double action, causing depression as well as stimulation but is chiefly a depressant.

The evidence that this is based upon is as follows: Even moderate amounts injected intravenously caused a considerable fall in blood-pressure, the diminution in the volume of the kidney which accompanied it showing that the depression of the circulation was car-



diac in origin. Though the respiration was stimulated by small doses of acetone, larger doses always caused a depression in cats as well as dogs. Speed of injection and repetition of dose were important factors in determining its action. Some difference was observed in the reaction of these animals to acetone, as the effect was more marked and more prolonged in cats than in dogs, which may be accounted for in the different speeds of elimination in these animals. It will be recalled that acetone was still present in the blood of cats 24 hours after its administration, but that it disappeared much sooner from the circulation in dogs. That acetone also depresses the central nervous system was shown by the narcosis and paralysis observed in the experiments on frogs, cats and dogs. The centers in the medulla, however, were variously affected, those of inhibition and vomiting being stimulated, while the respiratory center was stimulated by small and depressed by large doses. The influence on the isolated heart varied with the concentration, depression being much greater when it was perfused with 10 than with a 5 per cent acetone, while the solution of 1 per cent failed to cause any effect, even when the perfusion time was quite long. The change consisted in decreased force without noticeable alteration in the frequency of the heart, although in some cases slowing was observed. But in all experiments, recovery occurred when acetone solution was followed by perfusion of Ringer's solution alone. It may be added that the effect on the heart of the turtle was less pronounced than that on the frog's heart.

The results of the experiments would seem to contradict some of the statements in the literature concerning the action of acetone. We never observed the acceleration reported by Albertoni, Parabini or Albanese. As to the potency of acetone, its action is not very strong but nevertheless considerable. Its action was greatly augmented when just active or subminimum doses were given. The increased sensitiveness may be of some significance in pathology. Though the amounts of acetone present in the blood in acidosis is comparatively small, it should be borne in mind that the tissues and organs of the body may be exposed to its action for a considerable period of time. There is no justification for the assumption that acetone is without effect because the concentration in the blood is low.

C. A. SCHMID.

RACKEMANN, F. M.: **The Mechanism of Hay Fever.** *Archives of Internal Medicine*, August, 1922, xxx, No. 2, p. 221.

Rackemann draws attention to the distinction between allergy and immunity. He says specific antibodies are present in both conditions. In allergy these antibodies are predominantly fixed in the cell; in immunity, the antibodies are predominantly in the circulating blood. However, in neither condition are the antibodies in one location exclusively. In allergy the symptoms probably depend upon reactions which take place in the cells.

Hay fever is an example of allergy. The cells contain specific antibodies which are not found in the cells of normal persons. When an antigen is applied repeatedly to the same spot on the skin of a hypersensitive patient, the local reaction following each application, becomes progressively less, indicating a local exhaustion of these antibodies. (Mackenzie and Baldwin: *Arch. Int. Med.* Dec., 1921, xxviii, p. 722.) He was unable to demonstrate antibodies in the blood of hay fever patients. The fact of cellular fixation of antibodies is demonstrated in another condition. In serum disease the skin is sensitive to horse serum, even after the disappearance of antibodies in the blood.

The author explains the great variations in the results of specific treatment of hay fever by the variation in the degree of sensitiveness, although the delicacy of the skin test, is only a crude measure of the number of cellular antibodies.

T. HOWARD.

WAUGH, T. R.: **An Efficient and Practical Method for the Counting of Red Blood-Cells.** *Archives of Internal Medicine*, August, 1922, xxx, No. 2, p. 216.

The author describes a modification of Dryer's quick and simple method for counting blood-cells and bacteria without the use of a counting chamber. Dryer's Method, (*Jour. A. M. A.*, October. 8, 1921, lxxvii, p. 1166.) consisted in the use of a standard suspension of chicken's corpuscles, with which the blood to be counted is mixed, smeared, and directly compared. Waugh suggests, that as the differentiation of human and avian corpuscles while easy, is not instantaneous, and that hens are not common laboratory animals, it is of



advantage to use instead, a suspension of crenated fixed and stained human red corpuscles. He also advises that the suspension be made up to 25,000 per cmm. instead of 20,000, in order to facilitate calculation.

T. HOWARD.

EGGLESTON, C., AND WYCKOFF, J.: **Absorption of Digitalis in Man.** *Archives of Internal Medicine*, August, 1922, xxx, No. 2, p. 133.

In 1920, R. A. Hatcher, (*Jour. A. M. A.*, August 14, 1920, lxxv, p. 460) described a digitalis body obtained by extracting the aqueous extract with chloroform. This body resembles digitoxin. The present paper describes some studies in which this preparation, which is called purified tincture, is compared with certain galenic tinctures, with special reference to variability in absorption, as shown by the occurrence of the first evidences of digitalization, and the full therapeutic effect. The purified tincture is prepared by infusing the powdered digitalis with cold water, shaking this with chloroform, washing this with petroleum ether, and drying. The residue is dissolved in 60 per cent alcohol, and standardized by Hatcher's "slow, combined, ouabain" method.

A clinical study of this preparation showed that the average time for absorption was about one-third that required for the official tinctures. Of the 33 patients receiving the purified tincture, 25 showed definite evidence of absorption of the drug in one hour or less. Considering the average time required to produce the full therapeutic effects, a similar relationship was found, the purified tincture requiring only about a third of the time required by the galenic tinctures. Of the 33, only 7 required 24 hours or longer for the development of the effects, the average length of time being a little more than 13 hours.

A study of the dosage required to produce the initial digitalis effect showed the range of variation for the purified tincture amounted to 23 per cent below, and 21 per cent above the average, the total variation amounting to 44 per cent. Seven different official tinctures previously studied varied to the extent of 116 per cent. The average initial dose for the purified tincture required to produce the earliest demonstrable effects on the heart was found to be 0.056 of a cat unit per pound of the patient's body weight. This is only 20 per cent greater than that of crystalline digitoxin, and is but 55 per

cent of the corresponding dose of the average well absorbed tincture of digitalis.

T. HOWARD.

MANN, F. C., AND MAGATH, T. B.: **Studies on the Physiology of the Liver. III. The Effect of Glucose Administration in the Condition Following Total Extirpation of the Liver.** *Archives of Internal Medicine*, August, 1922, xxx, No. 2, p. 171.

In previous papers the authors have shown that total extirpation of the liver is followed by a characteristic syndrome, which proves fatal in the course of a few hours, and that this syndrome is associated with a marked decrease in blood sugar. The present study was carried out in order to determine, if possible, whether the fall in blood sugar was responsible for the symptoms. It was found that the intravenous administration of glucose immediately revived an animal, moribund from the effects of hepatectomy. After an hour or so the blood sugar level again decreased, and the characteristic symptoms reappeared. They could be repeatedly controlled by sugar injections, but ultimately other symptoms developed in spite of the high blood sugar level. The first set of symptoms was prevented from appearing by glucose injection and by glucose feeding, but ultimately the second set which apparently is independent of carbohydrate metabolism, would supervene.

Four other sugars were found which to a less extent protected hepaticized dogs from the characteristic syndrome, maltose, mannose, galactose, and dextrin, galactose protecting but slightly. Maltose was the most satisfactory of these, but acted much more slowly than glucose, probably being converted to glucose in the blood. Numerous other sugars were inert as were hypertonic salts, acid or alkaline solutions. Evidence seems to be furnished that the rapidly fatal effects of hepatectomy are due to the consequent fall in the amount of glucose in the blood.

T. HOWARD.

WALLENSTEIN, S.: **The Interpretation of the Wassermann Reaction.** *New York Medical Journal*, May 3, 1922, cxv, No. 9, p. 514.

The Wassermann reaction may be regarded as specific. Great care and careful judgment must be exercised in the interpretation of



the results of the test. A negative reaction may occur in a syphilitic due to the normal daily variation in the complement fixation power of syphilitic serum. Contaminated blood may give falsely positive reactions. Wassermann fast cases mean a grave infection and usually visceral or nervous syphilis. A positive reaction with the cholesterolized antigen only or with the ice box method of fixation are of value only with a history or symptoms of syphilis.

The ingestion of alcohol previous to taking blood will render the reaction negative. A positive reaction is obtained in normal sera shortly after general anesthesia. Blood containing bile may give a positive reaction. A negative reaction in the newly born for a period of four months is of no value. A single negative reaction means nothing. In a suspected case a series of eight consecutive daily tests should be done.

J. ROSE.

BACON, D. K., NOVY, F. O., AND EPPLER, H. H.: **Factors in Leukocytosis.** *Archives of Internal Medicine*, August, 1922, xxx, No. 2, p. 229.

The authors injected hypertonic saline solutions into dogs, and observed thereafter marked diuresis, with consequent dehydration. Accompanying this dehydration they found a rise in temperature, an increase in the non-coagulable blood nitrogen, and a progressive polynuclear leukocytosis. The theory is advocated that the hypertonic body fluids so dehydrate the colloidal proteins that they become unstable and disintegrate with consequent production of fever through heightened metabolism and the attraction of leukocytes through the action of metabolites. The suggestion is made that the leukocytosis of infection may parallel this phenomenon, the leukocytosis being the result of the increased production of protein cleavage. In general infections, such as pneumonia, and colon bacillus peritonitis, the non-coagulable protein is found increased, and in typhoid, which is characterized by leukopenia, it is not increased.

In the case of a local infection "the toxin concentration, change of water requirements (local edema), cleavage of protein and consequent heat production would be most in the immediate vicinity of the offending organisms. The leukocytes, always moving from lesser to greater concentration of the activating nitrogenous bodies, might be

expected to leave the circulation at a point near the area of infection, and following the ever fresher trail arrive in the midst of the bacteria, in increasing numbers, with eventual engulfment of the organisms, each a center of disturbance, thus leading to phagocytosis and pus formation."

The authors also point to the corroborative evidence of this work in support of the essential correctness of Vaughn's dehydration theory of fever.

T. HOWARD.

MEYER, E. H.: **Digestive Leukopenia as a Test of Hepatic Function and Its Relation to the Green Benzaldehyd Reaction in the Urine** (Über den digestiven Leukocytensturz als Leberfunktionsprüfung und seine Beziehungen zur Grünen Benzaldehydreaktion im Harn). *Klinische Wochenschrift*, April 29, 1922, 1, No. 18, p. 890.

Widal assumes that during digestion the proteolytic substances formed in the intestinal canal after a protein meal are bound to the liver cell. He calls this "fonction protéoprexique". If the liver cell is damaged, these substances reach the general circulation and a "crise hémoclasique" is produced which gives a leukopenia, a fall in blood-pressure and changes in the coagulation time of the blood. These same phenomena are produced in peptone shock. Indeed, Widal has succeeded in producing these phenomena by injecting portal blood into the veins of an extremity. The reactions occur only for the first 2 hours after digestion, as after that amino acids are produced which cannot produce these phenomena.

The technic of the test is as follows: In the morning before breakfast, the leukocytes are counted. Then 200 c. c. of milk are given and the leukocytes counted every 20 minutes. In hepatic insufficiency there is a distinct fall in the total number of whites and an inversion of the leukocytic proportion. The author found the test negative in 15 per cent of clinical cases of damage to the liver. In the positive cases Ehrlich's benzaldehyd reaction gave a green color.

Oddo reports an absence of these phenomena by feeding cases of hepatic insufficiency with extracts of liver substance. The author has been unable to confirm this. The other evidences of hepatic insufficiency such as an increase of the coagulability of the blood and



a fall in the blood-pressure the author has not been able to definitely substantiate.

H. JOACHIM.

ROSENTHAL, F., AND FALKENHAUSEN, M.: **A Contribution to the Chrome Diagnosis of Liver Function.** *Klinische Wochenschrift*, April, 22 1922, 1, No. 17, p. 832.

The authors used methylene blue on account of its rapid diffusibility, solubility, and easy recognition, in the bile. It could be isolated in dilutions of 1 to 300,000. The authors call their method, chromocholoscropy. The technic of the procedure is as follows: 5 c. c. of a 2 per cent solution of methylene blue in 0.85 per cent NaCl was injected into the thigh. The duodenal contents were then aspirated in from 5 to 10 minutes. In normal individuals methylene blue is recovered from the bile in from 55 to 95 minutes. In hepatic disease the dye is recovered in from 15 to 35 minutes. The authors think that in disease of the hepatic parenchyma, the liver cell permits this highly diffusible dye to pass through much easier than in health. They point to a similar action of methylene blue in renal disease. For the detection of the dye the authors have followed the method of Brauer. Their conclusions after the study of 100 cases, is that the test is a reliable index of damage to the hepatic cells.

H. JOACHIM.

MELLANBY, E.: **Some Common Defects of Diet and Their Pathological Significance.** *British Medical Journal*, May 27, 1922, No. 3204, p. 831.

Mellanby has been impressed by the fact that as soon as there is any interference with a natural food product, it becomes less suitable for food, and loses some of its best properties. If milk sours, and acid caseinogen is precipitated, calcium is lost, and if this acid caseinogen is used for food in a diet already deficient in fat-soluble vitamin, the resulting rickets becomes much worse. Even if butter is added to a diet, a certain additional amount of calcium must also be added, for probably in the separation of the butter some of the calcium has been lost. Butter is then not so good a food as one might expect, and is not as good a factor in preventing rickets, as the milk

from which it is made. As McCollom has shown, cod-liver oil confers the ability of utilizing to the full, every bit of calcium added to the diet, in rats. With a higher per cent of calcium in the diet, however, butter became as effective as cod-liver oil. The cod-liver oil permitted the use of the smallest amounts of calcium, while the butter did not. Cod-liver oil also contains one other element which is not contained in the other fats, namely iodine. This was evidenced by perfectly normal thyroids in the animals used and fed with a diet including cod-liver oil. The thyroids of the other animals, always had a tendency to enlarge. In the human diet it is probable that this iodine deficiency in England is not common, and the ordinary case of goiter is probably due not merely to iodine deficiency. It is due to some other lack of balance, making the story a complicated one. Experimentally, if iodine is given to a patient with exophthalmic goiter, 1 or 2 grains three times a day, the symptoms at first are improved; gain in weight, loss of tremor and sweating, and the thyroid becomes enlarged. If exophthalmic goiter patients are given cod-liver oil, the symptoms become markedly worse. In treating rickets in children, a diet containing milk, bread and beef dripping, with one ounce of minced raw meat, potatoes, greens and milk pudding, and in addition, cod-liver oil 3 times a day, and one orange, is the only treatment necessary. This diet not only cured the rickets and strengthened the bones, but absolutely transformed the child's attitude on life. These experiments have been cited to illustrate the differences that could be brought about in the anatomy and physiology of ordinary human tissue, by changes in diet. The work on foodstuffs is at its beginning, and it will take many years before all of the variables can be worked out, in which case the laboratory justifies itself in a way it has never done previously.

L. C. JOHNSON.

WEBER, F. P.: A Note on the Question of the Causation of Postural or Orthostatic Albuminuria. *British Journal of Children's Diseases*, 1922, xix, p. 85.

In uncomplicated cases of orthostatic albuminuria, the life may be regarded as a normal one from the standpoint of life assurance. It is clear that lordosis cannot be the only factor in the production of orthostatic albuminuria even in cases in which uræteric catheteriza-



tion proves the albumin in the urine to come only from the left kidney. There must be an individual predisposition of some kind. Lordosis by itself does not always produce orthostatic albuminuria. Other conditions may be responsible. Weber mentions that he found orthostatic albuminuria in two young men of 22 and 25 years of age who were suffering from extreme cyanosis of congenital heart disease and refers to other observers who found the condition in cases of polycythemia rubra secondary to heart disease.

M. B. GORDON.

TORREY, J. C., WILSON, M. A., AND BUCKELL, G. T.: **Comparative Value from Standpoint of Public Health of Smears, Cultures, and Complement Fixation in the Diagnosis of Chronic Gonorrhea in Women.** *Journal of Infectious Diseases*, August, 1922, xxxi, No. 2, p. 148.

By way of a general conclusion it may be stated that the smear, cultural and complement fixation methods of diagnosis in women have all proved useful, and that their values relatively, correspond to the order in which they are named, the last, being the most valuable. Whenever possible however, each test should be carried out, as it is shown that they tend to supplement each other. It would seem likely that the cultural methods utilized in this study might find their most useful application so far as public health work is concerned, in controlling the period of detention of infected women, undergoing treatment, and also in determining when cases of vulvo-vaginitis in children may be pronounced cured. With all such patients, of course, local treatments should be stopped at least 4 or 5 days before the cultures are made. In women, material should be obtained for culture from both the urethra and cervix uteri. At best, it must be admitted that the condition essential for the isolation of the gonococcus from these chronic infections of women are exacting, and can be met only by one experienced in bacteriological technic, and with the facilities of a well equipped laboratory. In spite of the greatest precautions, too, the plates, at times, may become overgrown with contaminating bacteria. The method is also more time consuming than are the smear and complement fixation methods. A positive report cannot be made at the earliest, before 2 days, and for a negative report, 4 or 5 days may be required. On the other hand, the isola-

tion of the gonococcus from one of the patients answers the question of infection in an entirely definite way, and under certain conditions, the results obtained may well repay the time and trouble necessary for the application of these cultural procedures.

M. M. BANOWITCH.

KORNS, H. M.: **Delayed Conduction Through the Right and Left Branches of the Atrioventricular Bundle.** *Archives of Internal Medicine*, August, 1922, xxx, No. 2, p. 158.

Korns reports the case of a man with broken compensation and auricular fibrillation, who, under the influence of digitalis, showed in his electro-cardiograms a pulsus bigeminus, the supra-ventricular complexes in all leads showing an irregular shift between right to left preponderance, and in many instances widening, and a diphasic character of the Q R S complex. These changes in the Q R S complexes were interpreted as being due to variations in the respective refractory periods of the right and left branches, probably the result of digitalis. They correspond to experimental tracings obtained by Wilson and Herrmann (*Heart*, 1921, viii, 229.)

T. HOWARD.

JORDAN, E. O., AND SHARP, W. B.: **The Serologic Relationships Between Strains of the Pfeiffer Bacillus.** *Journal of Infectious Diseases*, August, 1922, xxxi, No. 2, p. 198.

The particular strain of Pfeiffer bacillus used to produce an immune serum is usually agglutinated by the homologous serum more rapidly, more constantly, and in higher dilution than any heterogeneous strain. Absorption tests throw little, if any more light on the true biologic relationship of the different strains in this group than does direct agglutination. As a rule each strain of Pfeiffer bacillus possesses a serologic individuality. Occasional strains from independent sources exhibit a serologic identity. This is not common. As many as three serologic races may be present at the same time in the throat of one patient. There is no correlation between indol producing powers and agglutinative affinities, except possibly in the strains isolated from meningitis. The lack of any definite serologic grouping among strains of Pfeiffer bacilli is an indication that a dis-



tinct invasive type or types has not become fixed and is an argument against any member of this group as the primary causal agent in epidemic influenza. Possibly a race of influenza meningitis bacilli is in process of evolution.

M. M. BANOWITCH.

GRAFE, E.: **The Differential Diagnosis of Pulmonary Tuberculosis by the Determination of the Sedimentation Time of the Erythrocytes.** *Klinische Wochenschrift*, May 6, 1922, 1. No. 19, p. 937.

The differences in time of sedimentation of the red blood-cells is a phenomenon that was pointed out by Virchow. This phenomenon was again reviewed by Fahraeus in 1918. The author has applied this test to patients with pulmonary tuberculosis. Two hundred and eighty tests were made, and in normal males there is a 3 mm. sediment in a 1 c. c. tube in one hour, and 5 mm. in females. In tuberculosis these figures were increased. In doubtful cases the authors injected a provocative dose of tuberculin and the figures rose. Tuberculin injected into normal people did not influence the sedimentation of the red blood-cells. The author thinks that in this combined sedimentation and tuberculin injection tests he has found a reliable means of early diagnosis of pulmonary tuberculosis.

H. JOACHIM.

BROWN, W. L.: **The Biology of the Endocrine System.** *New York Medical Journal*, April 5, 1922, cxv, No. 7, p. 373.

Endocrine glands are modified nephridia. The only exceptions are the medulla of the adrenals, the cell islets of the pancreas and the doubtful instance of the pineal. In the worms and a lowly arthropod such as *Peripatus*, paired nephridia open externally in each segment. Where appendages are developed these form the coxal glands at their base. With the modification of these appendages the corresponding glands become modified. The prosomatic ones became the pituitary, the mesosomatic became the tonsils, thyroid, parathyroid and thymus, and the metasomatic formed the cortex of the adrenal. Only the hindmost retained their original excretory function, becoming conglomerated into the metanephros and drained into the metanephric duct. The pronephros and mesonephros of the primitive vertebrate

kidney vanished, except insofar as the latter gives rise to the interstitial cells, and their ducts were annexed by the gonads. The close anatomical relationship between the kidneys and adrenals is thus comprehensible. The formation of the new alimentary tract and the pleural folds shut off the anterior nephridia from the surface and forced them to become ductless. Nephridia contain lymphatic structures and some of those which had thus been shut off developed this lymphatic element at the expense of the glandular, but in their phagocytic properties still show their association with excretory functions. Others acquired new secretory functions, though in some instances still showing chemically a vestige of their primitive excretory action. The endocrine functions, which are the specialization of the old chemical method of stimulation and defense, became concentrated in these structures which had to change their functions. Gradually these chemical methods came largely under the control of the sympathetic nervous system which correlates them and enables them to be brought rapidly into action either for the ordinary processes of metabolism or for external and internal defense.

J. ROSE.

MELLANBY, E.: **Some Common Defects of Diet and Their Pathological Significance.** *British Medical Journal*, May 20, 1922, No. 3203, p. 790.

Ruebner brought forward the theory of diets, the theory of isodynamic equivalents, that a man needed only to eat enough food to give sufficient energy for his body, and the only qualification he made was that it should contain about 4 per cent of protein. Hopkins later put forward the theory of minimum, which meant that every diet, in order to produce perfect health must have at least a certain amount of certain constituents. The case of the primitive Eskimo is cited by Mellanby, and compared with the modern Alaskan. The former had perfect teeth, perfectly arranged in very hard well-formed jaws, and his limb bones were very strong. When he killed his animal to eat, he saved the blood in order to get sodium chlorid; ate the muscle tissue and fat, as well as the bone marrow and the softer parts of the bones; the glandular structures of the animal, he ate as dainties. The modern Alaskan, ate canned goods, largely, both cereals and meats, and his teeth were poorly calcified,



and as susceptible to caries as the man in more civilized communities. The same comparison was made of the African in his natural habitat, and in civilized communities. Also the Eskimo, living in his natural habitat, before the introduction of modern diets had no cancer, and the same was true of the Icclander. The modern diet has become changed largely because people have come to lead more and more an urban life, which leads them to have a very selected diet, and the food itself suffers in quality on account of transportation and storage. Also as to taste and appetite, people have come to eat largely of carbohydrates, meats, and often acid and highly flavored foods. Malnutrition was recognized when a child wasted away, but little attention has been paid to a state of under-nutrition, before the extreme manifestations have made their appearance. In animals more activity was obtained by adding fats to diets than by adding carbohydrates. Foods could be divided into two large groups; the first consisted of, milk, butter, cream, cheese, eggs, and green vegetables; the other, largely made up of, cereals, (wheat, rice, oatmeal, maize, and all the prepared products made up of such things), vegetable margarine, lard, meat (including pork), sugar, jam, potatoes, tea, coffee, and potatoes. The average man gets very little of the first group, and the second group is lacking in sodium, chlorid, calcium, anti-scorbutic vitamin, and if the fat of beef and mutton were discarded, also lacking in fat-soluble vitamin.

This fat-soluble vitamin is associated with calcium in nature, and apparently the body is unable to retain calcium, no matter how plentiful it may be in the diet if this fat-soluble vitamin is absent. Fats may be divided from the point of view of antirachitic action, as follows:

<i>Good</i>	<i>Moderate</i>	<i>Poor</i>
Cod-liver oil	Lard	Linseed oil
Beef suet •	Coconut oil	Olive oil
Butter	Rape	Palm-kernel oil
Egg-yolk	Cottonseed oil	Babassu oil

The experiments of Mrs. Mellanby, on dogs, have shown, that diets deficient in fat-soluble vitamin, give rise to poor growth of the jaws and alveolar process, irregular placing of the teeth, delayed and slow eruption, thin and defective enamel, teeth light in weight, poor development of the gingival margin, as well as, generally speaking, a

diminished resistance to disease. Dogs fed on cod-liver oil had good teeth; those fed on butter were moderately good, while those fed on linseed oil showed very bad formation of the teeth, and under the microscope, the tooth substance was defective.

L. C. JOHNSON.

PAPPENHEIMER, A. M.: **Experimental Rickets in Rats. VI. The Anatomical Changes Which Accompany Healing of Experimental Rat Rickets, Under the Influence of Cod-Liver Oil or Its Active Derivatives.** *The Journal of Experimental Medicine*, September, 1922, xxxvi, No. 3, p. 335.

The material for this study consisted of sections of ribs of 52 rachitic rats treated with cod-liver oil, together with numerous untreated controls and normal animals. The first obvious effect of the administration of cod-liver oil to a rachitic rat is the deposit of calcium salts in the zone of preparatory calcification. The exact site of this deposition varies somewhat, but it begins regularly in the lateral aspects of the cartilage, and, somewhat later, extends across the cartilage as a broad band. Gradually, the area extends basally as far as the rows of proliferating cells, and distally it involves all the irregular prolongations throughout the rachitic metaphysis.

The time relations vary greatly with the dosage, with the activity of the preparation used, and probably also with the severity of the rachitic lesions at the time when treatment is begun. Beginning calcification was observed within 24 hours after the administration of a single dose of pure cod-liver oil, and after 5 to 7 days, calcium was often present throughout the greater portion of the cartilage.

Accompanying the deposition of calcium in the matrix of the cartilage there is a laying down of the salts also in the osteoid tissue. The return to the normal structure involves also a resorption of the excessive cartilage and osteoid tissue which make up the swollen rachitic metaphysis. The excess of cartilage appears to be disposed of in the following way. With the calcification of the capsules and matrix of the cartilage cells, there is an invasion from all sides by blood-vessels which bring about a re-resolution of the calcium and a digestion of the contained cellular material, exactly in the same way as this takes place physiologically during endochondral ossification.



The study of the anatomical changes cannot, obviously, explain satisfactorily the mode of action of the cod-liver oil. That remains a purely chemical problem. The matter is, however, to a considerable degree simplified by the observation that the determining incident is the initial calcification of the preparatory cartilage and osteoid. The problem, therefore, resolves itself into the question of how cod-liver oil promotes the deposition of the calcium.

H. M. FEINBLATT.

TENBROECK, C., AND BAUER, J. H.: **The Tetanus Bacillus as an Intestinal Saprophyte in Man.** *The Journal of Experimental Medicine*, September, 1922, xxxvi, No. 3, p. 261.

In the literature it is repeatedly stated that man may carry the tetanus bacillus in his digestive tract. This view offers the best explanation for some idiopathic cases of tetanus and for the cases following typhoid fever, dysentery, and hemorrhoid operations. The authors became interested in the presence of tetanus bacilli in the digestive tract through a case in which the best explanation of the source of infection seemed to be a fecal contamination of a bed-sore.

The results here reported are based upon the examination of the feces of 78 male Chinese, living in the vicinity of Peking. The method used for the detection of the tetanus bacilli was the culturing of the suspected material, the isolation of tetanus-like organisms, and the demonstration that the pure culture formed a spasm-producing toxin neutralized by tetanus antitoxin. Using this method, the authors demonstrated tetanus bacilli in the stools of 34.7 per cent of the 78 individuals examined. The tetanus bacillus grows in the intestinal tract, for it was present in individuals who had been on a practically sterile diet for a month or more. One individual may eliminate several million spores in a single stool.

The results show that one-third of the male population in the vicinity of Peking carries tetanus bacilli in the intestinal tract and that the bacilli are probably multiplying there. Man thus plays a large rôle in the distribution of the bacillus, for it is not uncommon to see human feces deposited on the streets, and human feces are used to fertilize the fields, so that dust from the streets and fields must contain great numbers of spores that come from man.

H. M. FEINBLATT.

JONES, F. S., AND LITTLE, R. B.: **An Epidemiological Study of Rhinitis (Coryza) in Calves with Special Reference to Pneumonia.** *The Journal of Experimental Medicine*, September, 1922, xxxvi, No. 3, p. 273.

During an outbreak of pneumonia among the calves of a large dairy, 32 calves in one barn were exposed to the disease. Ten clinical cases developed, and 2 died of diffuse pneumonia. From these *bovis septicus* organisms, Group I, were obtained at autopsy. Four affected with pneumonia and 8 other calves which failed to show symptoms of pneumonia developed a purulent rhinitis. Group I organisms were cultivated from the nasal mucosa of these animals. The characteristic rhinitis was produced by brushing the nasal mucosa with a swab dipped in culture. Certain of the calves which suffered from the spontaneous rhinitis continued to carry the organisms in the nasal passages for periods as long as 121 days.

H. M. FEINBLATT.

EBELING, A. H., AND FISCHER, A.: **Mixed Cultures of Pure Strains of Fibroblasts and Epithelial Cells.** *The Journal of Experimental Medicine*, September, 1922, xxxvi, No. 3, p. 285.

For years the question of dedifferentiation or transformation of tissue cells into an indifferent embryonic cell type when cultivated *in vitro* has been under discussion. It was found that, when epithelial cells were allowed to grow embedded in the clot, their shape changed from polygonal to fusiform. Therefore, under these conditions, cultures of epithelial cells looked like cultures of fibroblasts, but under high magnification, there was no difficulty in distinguishing epithelial cells from fibroblasts. In order to settle the question of dedifferentiation, it was thought of interest to determine whether epithelial cells and fibroblasts could be distinguished from one another after they had been allowed to grow side by side in the same culture for several generations.

The experiments conducted showed that strains of epithelium and fibroblasts cultivated side by side in the same medium for two months kept their individual characteristics. When sectioned and stained by the Van Gieson method, the cultures showed the epithelium stain-



ed greenish yellow and the fibroblasts and their fibrillae pink. There were no transition forms between the epithelial cells and the fibroblasts. The epithelium was observed to have formative ability; i. e., the epithelial cells arranged themselves in winding tubules. No de-differentiation was noted.

H. M. FEINBLATT.

ORCUTT, M. L., AND HOWE, P. E.: **The Relation Between the Accumulation of Globulins and the Appearance of Agglutinins in the Blood of New-born Calves.** *The Journal of Experimental Medicine*, September, 1922, xxxvi, No. 3, p. 291.

Recent work has demonstrated with regard to the agglutinins of *bacillus abortus* that the blood of the normal new-born calf before it has received colostrum does not contain agglutinins. Furthermore, the blood of a new-born calf before it has suckled does not contain appreciable quantities of protein precipitated by concentration of sodium sulfate which are less than 17.4 per cent. After the ingestion of colostrum, both these proteins and the agglutinins are present in relatively large amounts. The data presented in this paper bear upon the relation which exists between the appearance of the agglutinins and the accumulation of the globulins in the blood of new-born calves and upon the protein fractions in the colostrum and the blood with which the agglutinins are associated. The experiments conducted indicate definitely that the protein, or protein mixtures, precipitated up to and including 16.4 per cent of sodium sulfate carries with it the agglutinins. It is this fraction which is absent from the blood of the new-born calf, which is abundant in most samples of colostrum, and which is absorbed directly by the new-born animal.

H. M. FEINBLATT.

DEKRUIF, P. H.: **Rabbit Septicemia Bacillus, Types D and G, in Normal Rabbits.** *The Journal of Experimental Medicine*, September, 1922, xxxvi, No. 3, p. 309.

As it was necessary to obtain rabbits which were free from the bacillus of rabbit septicemia in order to study the epidemiology of this infection, the normal rabbit stock of the laboratory was examined

by culturing of the nasal mucous membrane. Microbe *G*, rabbit septicemia bacillus, hitherto found only as a mutant in cultures of the rabbit septicemia bacillus, Type *D*, was demonstrated to exist on the nasal mucous membrane of normal rabbits. This organism corresponded in lack of virulence, character of growth, acid agglutination optimum, and immune agglutination reaction, to the mutant *G* form previously described. Microbe *D* was likewise found to be present on the nasal mucosa of normal rabbits. These animals have survived for months with no evidence of infection other than the presence of the organism.

H. M. FEINBLATT.

JONES, F. S.: The Source of the Microorganisms in the Lungs of Normal Animals. *The Journal of Experimental Medicine*, September, 1922, xxxvi, No. 3, p. 317.

The animals studied were calves, rabbits, guinea pigs, white mice, and white rats. Small pieces of lung tissue cut from the borders, furthest removed from the trachea, of the various lobes were added to tubes of relatively simple media, such as slanted plain agar and agar to which a few drops of defibrinated horse blood had been added and veal infusion bouillon. It was thus possible to show that the lungs of these animals are readily invaded by organisms. The most frequent types observed in the cultures were the streptothrix, molds, and bacteria of the *Bacillus subtilis* group. These forms originate in certain dry food-stuffs (hay and straw). By withholding or moistening these materials it was possible to reduce the number of organisms in the lung. It hardly seems possible that organisms the size of the streptothrix, the type most frequently found, the molds, or even bacteria of the *subtilis* group are capable of vegetating and multiplying within either the smaller bronchi or alveoli. Even moderate multiplication would doubtless lead to serious mechanical disturbance. It seems more reasonable to assume that the spores of these various types which abound in dry vegetable matter are taken into the respiratory tract with each inspiration. The bronchial lymph-nodes of all guinea pigs examined developed, in 66 2/3 per cent of the tubes, organisms similar to those obtained from the lungs.

H. M. FEINBLATT.



HAYTHORN, S. R.: **The Practitioner's Part in Acquiring the Knowledge Necessary for the Intelligent Interpretation of Atypical Wassermann Reactions.** *Pennsylvania Medical Journal*, 1922, xxv, 602.

The Wassermann test is atypical in any given case because of a discrepancy in one of three places: (a) The technic of the test; (b) the manner and time of collection; and (c) within the serum itself, as influenced by the conditions in the patient's body.

(a) There are a certain few inferior technics which have survived, and no small per cent of the atypical tests are due to the use of such methods. The test is first of all a quantitative one, and then a technic which fails to bring out the relative amounts of positive substances in the given serum, is not an efficient method. The more sensitive the test, the more accurate will the titration become and the more carefully the patient's serum is measured, the fewer atypical tests will be found.

(b) In collecting the material for the test use clean sterile syringes and containers, free from water, antiseptic or other foreign material. Even very small amounts of water, alcohol or antiseptics may begin hemolysis and interfere with clear reading. Collect the blood when the patient's stomach is empty, preferably before meals or two or three hours afterward. The blood should not be taken within 48 hours after a general anesthetic, or after an alcoholic debauch. The blood should be collected within 24 hours of the test. A weakly positive test may become negative if the blood has been kept in the refrigerator for a week.

(c) Fevers and sometimes pregnancy will confuse the expected result. Thorough treatment generally changes positive tests to partially positive, and finally negative ones. The lapse of years brings about the development of the Wassermann positive bodies, gradually enough to show partially positive stages in the reaction. Finally, many other changes may influence the test, and it is only by thorough study of carefully compiled and correlated clinical and laboratory data that their relative importance is determined.

This report includes a study of 8,000 tests with a standard technic. The technic was as follows: The anti-sheet system was used. The natural anti-sheet ambocceptor was absorbed and a tube was set up in each series to determine whether any of it still persisted. Two

carefully titrated antigens were used in each test, and in some of the tests, Neyman's antigen was also used. One antigen was the cholesterinized alcoholic extract of a human heart, and another the acetone insoluble fraction of the alcoholic extract of beef heart; 0.2 c. c. of patient's serum and 0.4 c. c. of spinal fluid were used routinely. Occasionally, with graded tests larger amounts were used. The tests were recorded with reference to relative amounts of fixation of the two standard antigens. The cholesterinized was much more sensitive, and when a series of tests was made on the same patient, fixation persisted when complete hemolysis was the constant finding, with the acetone insoluble antigen.

In a series of 7,000 tests, all but 613 were accompanied by histories, which leaves a remaining 5, 287; of these 729 showed 4 plus positive tests; 118, 3 plus positive; 227, 2 plus positive, and 26 showed 1 plus positive tests. All with histories.

He summarizes by stating that the results show that the partially positive or atypically positive test has a place of distinct value in the diagnosis and control of the treatment of syphilis. Very important are the tests of 2 and 3 plus types, when the result is repeatedly obtained. Treatment is the chief factor in altering the intensity of the reaction. Blood findings in neurosyphilis, and the length of time in latent stages, are important points of consideration. These cases need additional data, which is gained by the thorough coöperation between the physician and the serologist.

NOGUCHI, H.: **Etiology of Yellow Fever. XIV. Duration of the Protective Effect of Anti-icteroides Immune Serum After Subcutaneous Inoculation into Animals.** *The Journal of Experimental Medicine*, September, 1922, xxxvi, No. 3, p. 357.

The anti-icteroides immune serum is capable of protecting susceptible animals against infection with *Leptospira icteroides* when administered simultaneously or during the early period of the disease. It has been found that the mortality among human cases of yellow fever treated with the immune serum on or before the third day of the disease is much lower than that among untreated cases. Of 71 cases treated within the first 3 days of the disease in Central America and Peru only 5 died (7 per cent mortality). The serum has apparently undoubted therapeutic value in human cases of yel-



low fever as well as in experimental infection with *Leptospira icteroides* in animals. Vaccination by means of killed cultures of *Leptospira icteroides* (injected in two subcutaneous injections of 2 c. c. each, 4 to 6 days apart) has been shown to confer complete protection within 10 to 15 days of the last inoculation. During the period required for the development of active immunity, however, anti-icteroides serum might be utilized for the immediate protection of non-immune individuals who find themselves in an epidemic or endemic focus of yellow fever, or it might be substituted for vaccination in the case of persons who intend to only pass through an infected district. The passive immunity thus conferred is necessarily of short duration, yet the employment of anti-icteroides serum for the temporary protection of non-immune individuals might be of considerable practical value.

In the experiments here reported guinea pigs were used to determine the duration of the protective effect of an injection of anti-icteroides immune serum. The animals were given different quantities of the immune serum and subsequently injected at various intervals, with a virulent strain of *Leptospira icteroides*. Complete protection enduring 5 days was obtained with as minute quantity of serum as 0.002 c. c. per 1000 gm. of body weight. After 5 days, however, the immune substance rapidly diminished, and to keep the animal protected for as long as 10 days it was necessary to give 100 times as much or 0.2 c. c. For a man weighing 80 kilos, 0.16 c. c. ( $0.002 \times 80$ ) would theoretically be sufficient to protect for at least 5 days, 1.6 c. c. for 7 days, and 16 c. c. for 10 days. This temporary protection may be a valuable antecedent to that furnished by vaccination, since the final effect of the latter cannot be expected until at least 9 to 10 days have passed.

H. M. FEINBLATT.

## SECTION ON PEDIATRICS

MCNEAL, M. D. AND ELDRIDGE, C. J.; **The Presence of Formic Acid in the Urine of Infants and Older Children.** *American Journal Diseases of Children*, May, 1922, xxiii, 419.

A review of the procedures used in determining the formic acid content of urine revealed the Autenrieth method as satisfactory, and that 0.28 grams per 24 hours were found in normal adults. The technic included distillation of 300 c. c. of urine after 30 c. c. of 25 per cent phosphoric acid had been added, down to 75 c. c., water being re-added, and the whole later converted by the reducing power of mercuric chlorid to mercurous chlorid, for which in every gram there are .0977 grams of formic acid. This method was applied to fifty-six specimens of the urine of children for a three-day period. Tabulation and comparison of the results with those of Lind's method were made. The general conclusions were that probably the urine of children contains formic acid.

C. A. WEYMULLER.

GIVANS, M.: **I. The Antiscorbutic Property of Fruits. II. The Experimental Study of Apples and Bananas.** *American Journal of Diseases of Children*, 1922, xxiii, p. 210.

A further contribution to the work on the antiscorbutic qualities of fruits as stimulated by the practical economic value of similar work done by the author on cabbage, potatoes, tomatoes, meat and orange juice to the British mission to Vienna on deficiency diseases, and the ever present possibility of future food shortages; such shortages would involve the use of dessicated foods, and accordingly preparations of apples and bananas dessicated at various temperatures were administered to guinea pigs that had artificial scurvy. It was the author's opinion that apples and bananas, especially raw fruits, had definite antiscorbutic value, and that dessication very appreciably



lowered that value. Canned and preserved fruits, then, suffer to a degree impairing their practical importance as antiscorbutic. He urges the necessity for a quantitative standard of antiscorbutic value, and agrees with the principle that a high temperature used over a short period of time will reduce antiscorbutic power less than a lower temperature exerted over a longer period of time. He also brings up the question of maturity of fruits, since he found dessicated apple peelings to be possessed of higher antiscorbutic power than an apple pulp.

C. A. WEYMULLER.

GLOVER, S. G.: **Diagnostic Points in the Treatment of Children.** *Archives of Pediatrics*, February, 1922, xxxix, p. 99.

The significance of numerous symptoms is discussed, no attempt at systematization being made. The hydrocephalic head is rounded and symmetrically enlarged, the whole forehead over-hanging. A flat top of the head suggests rickets, early closure of the fontanel in small brain is due to individual peculiarity; late closure, to rickets or hydrocephalus; a bulging fontanel indicates increased intracranial pressure. Coarse hair suggests thyroid insufficiency, a unilateral nasal discharge suggests foreign body, thin bloody discharge diphtheria, and mucopurulent bloody discharge suggests lues. Mouth breathing suggests adenoids, buccal Koplik's spots means measles, a white spot in the eye means congenital cataract and cherry red spots on the retina means amaurotic family idiocy. Puffiness under the eyes in addition to heart and kidney diseases may come from nasopharyngeal obstruction. Enlarged cervical glands lasting 4 to 6 weeks often is tuberculous. Congenital atelectasis improves on crying, but congenital hearts become more cyanotic. Pneumonia results in empyema one time in twenty. The left interseapular dullness is greater than the right because of the great vessels in the neck. An enlarged abdomen suggests kidney sarcoma, tuberculous peritonitis and dilation of the intestines from nutritional disturbances. Gastric hemorrhage suggests tuberculous peritonitis; enlarged spleen, oftenest, malaria or lues. Anal mucous patches mean lues. Intussusception has sudden shocking onset with mucous and bloody discharge without fecal matter. Salve shin or Hutchinson's teeth, suggest lues. Pallor, enlarged spleen and deafness suggests leu-

kemia. Mongolian idiots are restless, have associated stigmata and do not respond to thyroid medication. Scurvy usually invades the lower end of the femur and may cause bloody urine, must be differentiated from poliomyelitis, rheumatism, injury, nephritis, epiphysitis or osteomyelitis. In unexplained fevers, rule out otitis media and pyelitis. Do not feed starch in gas bacillus diarrhea nor protein in Shiga dysentery. Carbohydrate indigestion is preceded by weight loss, scalded buttocks and grass green stools, the shine in the stool on smoothing out is due to protein. Brick red color in napkin is due to urates in urine. Bile changes stools to green on standing 6 to 8 hours; most fat in stools is in the form of fatty acids.

C. A. WEYMULLER.

SHANNON, W. R.: **Eczema in Breast Fed Infants as Result of Sensitization to Foods in the Mother's Dietary.** *American Journal of Diseases of Children*, May, 1922, xxiii, p. 292.

Shannon reviews prevailing opinions and theories on the causation of eczemas, emphasizing the prevalence of Czerney's opinion that disturbance protein sensitization as an important factor, and substantiation of the opinion that "foreign proteins occurring in the breast milk are the most probable means of such sensitization in this group of cases", was afforded by the report of 8 cases. All cases were essentially breast fed, variously tested with foreign proteins, and reported in detailed tabulation, the conclusions being:

(1) Eczema in a breast fed baby is the result of sensitization to food proteins in the mother's dietary, and is transmitted to the infant through the breast milk in at least a great majority of cases.

(2) Removal of these proteins from the mother's dietary usually cures the patient.

(3) Where removal of offending food is impracticable, limitation improves condition somewhat, presumably because there is a threshold in the mother up to which the offending food may be eaten without appearing in her breast milk.

(4) Cutaneous tests of purified food proteins determine sensitization in the infant.

(5) Erythematous reaction is a positive sign and is more frequent than a wheal and therefore more important.



(6) Sensitization is oftenest multiple, may be to the majority of food in mother's dietary and may progressively become widespread, due to acquisition of sensitization to newly taken foods.

(7) Repeated exacerbation and failures to cure may be attributed to—(a) mother's non-coöperation in following dietary; (b) widespread dietary sensitization making limitation impracticable; (c) insufficient number of tests, or improperly performed tests; and (d) newly acquired sensitizations.

(8) In prophylaxis, large food varieties, taken in small quantities, advised for all mothers. Eggs should be restricted rather than forced. Early study of eczema before sensitization is widespread is recommended.

(9) All poorly responding eczema cases deserve protein sensitization tests for every food in the mother's dietary, with frequent re-testing in the event of exacerbations.

C. A. WEYMULLER.

GRAY, H., AND EDMONDS, G. H.: **Indices of the State of Nutrition in Children.** *American Journal of Diseases of Children*, xxiii, p. 226.

An attempt to determine the normal state of nutrition of children brings to light the marked variations in the accepted methods of the day. The authors have applied their methods to 114 boys of the so-called upper strata of society, deeming them ideal subjects for a precise average, rather than the "zone like" type of average heretofore accepted. A synopsis of studies on the indices of nutrition was given, the most promising to the author being simultaneously applied to the 114 subjects.

The following interesting opinions were arrived at:

(1) The Dreyer-Hanson tables seemed most generously applicable and most accurate in predicting weight; the tables include a certain "stern-length"; stern-length is measured sitting on a flat table, sacrum and head against a wall, resting the chin on knees in flexion, eyes straight ahead, a weight for height and a weight for chest girth, both mean and at rest. For weight predictions, the mean between the tabulated weight for stern-length and the weight for chest girth in inspiration and that of expiration to the measurements of chest girth at rest.

(2) Von Pirquet's formula seemed useful since the results were widely different when the arbitrary index was 100 instead of 94, and the general error seemed considerably more.

(3) The ideal tables of the authors showed the least percentage of error.

The general conclusion was, then, that the mean between weight for stem-length and weight for chest girth, according to the tables of Dreyer and Hanson gave the most satisfactory prediction of average weight.

C. A. WEYMULLER.

WILLARD, DEF. P.: **Progress in Bone and Surgical Tuberculosis.**  
*Archives of Pediatrics*, 1922, xxxix, 327.

*Diagnosis.*—Early in the progress of the disease the x-ray is of little value. After considerable bony destruction, x-ray shows the lesion. It is far better to start treatment early than to wait for x-ray diagnosis. A subcutaneous injection of tuberculin (Koch) with a careful watching of the child's temperature before and after the injection, is of aid in an early diagnosis.

*Pathology.*—When compact bone is involved, proliferation predominates; when cancellous bone is involved, destruction predominates. The proliferation most frequently localizes in the end of bones, and consequently involves joint structures.

*Treatment.*—Fixation with cessation of weight-bearing for the affected joint and adjacent joints is still of the greatest importance, especially Hibb's and Albee's spinal fixations are of special value in adult cases. In children, they must be followed up by conservative treatment until the disease is quiescent. If, in the hip, Maragliano recommends an osteoperiosteal graft through the trochanter, neck and head of the femur to the acetabulum. Heliotherapy with pigmentation of the skin with no actual burning, is of undoubted value. Levett concentrates the rays with the use of double convex lens to shorten and concentrate the therapeutic effect. Others report favorable results from coal-arc light, especially in tuberculosis of the soft parts and more superficial parts.

X-ray therapy causes tuberculous tissues to melt out and separate; cavities can be drained and radiation begun in 2 or 3 days, and re-



peated every week or two. He cautions that heavy aluminum filters, in order to prevent skin burns, should be used.

Tuberculin is not advocated by this author, except as an aid to diagnosis.

Autogenous vaccines are advised to cut down infection and toxemia. They are best given alone, than with tuberculin.

SECTION ON  
ROENTGENOLOGY AND ELECTRO-  
THERAPEUTICS

SCHMIDT, H. W.: **The Importance of Roentgen Examination in the Early Diagnosis of Renal Calculus.** *New York Medical Journal*, May 3, 1922, cxv, No. 9, p. 533.

There are many cases of obscure abdominal conditions without localized symptoms, in which a diagnosis cannot be made by ordinary methods. In the early history of these patients there is often something to direct attention to the kidneys. At the present time with proper apparatus, experience, and not too fat a subject, it is possible to detect renal calculus in the majority of cases by means of the x-ray. Early use of the x-ray will make the diagnosis and save subsequent destruction of the kidney.

J. ROSE.

O'BRIEN, F. W., AND AMES, F. B.: **Roentgen Ray and Tuberculosis in Children.** *Boston Medical and Surgical Journal*, August 24, 1922, clxxxvii, No. 8, p. 279.

The authors present a supplementary group of 34 infants and children studied from the standpoint of correlating roentgen ray and clinical findings. These are added to 44 previously reported and from the group of 78 they have found the following:

(1) A complete total of 20 cases of definite chronic pulmonary tuberculosis in 78 children under 14 years of age, or 24+ per cent. Ten, or 50 per cent, were in children under 10 years of age. In spite of the apparent concentration of tuberculous cases at the Boston Consumptives' Hospital we believe this large number of positive findings points to more widespread incidence of pulmonary tuberculosis in children than has yet been sufficiently emphasized. The roentgen ray was of definite help in determining site, extent and type of lesion in each of the positive cases.



(2) Eight patients were examined in whose lung fields the roentgenogram showed typical markings consistent with pathology caused by tubercle bacilli. These cases were negative clinically. Inasmuch as the prophylaxis of tuberculosis is more and more being begun in childhood, the roentgen ray evidence of pulmonary involvement may safely be taken as a warning, and certain positive cases should receive more detailed attention and treated along preventive lines.

(3) Ten cases from the old series were re-examined by roentgen ray. These cases were clinically negative, but had shown positive lung field markings in previous roentgenograms. Five of these 10 showed changes consistent with progression of the pulmonary condition; 2 showed development of cardiac lesions.

From these they conclude that serial roentgenograms should become a routine part of methods of procedure in the diagnosis and preventive treatment of tuberculosis in infants and children.

M. M. BANOWITCH.

## SECTION ON NEUROLOGY AND PSYCHIATRY

**WATKINS, H. M.:** **A Note on General Paresis at the Danvers State Hospital.** *Boston Medical and Surgical Journal*, July 17, 1922, clxxxvii, No. 4, p. 137.

There are at present 54 paretics at the hospital, and of these 42 are being daily employed in some sort of work, varying in amount from 1 to 6 hours. The apparent improvement in a few cases justifies the belief, that routine administration of anti-syphilitic therapy is called for in all cases of paresis, and that he is a better patient, both within and without the institution, under treatment. Practically no ill effects have been observed under intense treatment. Twenty per cent are able to carry on outside, by the aid of the Social Service department, and our outside clinics. Seventy-seven per cent of those in the hospital are able to do some form of useful work, while of 67 studied, only 9 are in bed, and of these only 4, continuously.

M. M. BANOWITCH.

**HEARN, R.:** **The Results of Treatment in Syphilis of the Central Nervous System.** *British Medical Journal*, July 8, 1922, No. 3210, p. 37.

A careful study of 100 cases of syphilis of the central nervous system, 64 showed no trace of any scar, and it is suggested that the more transient the original sore, the more likely is the patient to develop a nervous manifestation in later years. Seventeen cases were of meningeal, interstitial, or of late secondary type, and of these, 2 were definite "neuro-recurrences" following salvarsan.



As a result of treatment all of these were restored to normal health, but those who complained of tinnitus aurium, never lost this distressing symptom. Of degenerative or parenchymatous cases, there were 83, and these were symptomatically benefited, but in no case was it possible to alter the physical signs, and the question of treating these was decided by the improvement in symptoms. The spinal fluid was of no value in deciding as to treatment. Four typical tabetics clinically had a normal spinal fluid. Broadly speaking all of the spinal fluid tests appeared to be uninfluenced, except that in 2 cases the cell count fell to simple figures and in one case the Wassermann became negative. General paretics were improved, providing they were treated before they were obviously stupid and fatuous. Five of these early paretics have continued to improve, but the gold curve in all of them remained paretic. The author believes that once the gold curve assumes this type it never alters.

In treatment, on the first visit a spinal tap was done and the spinal fluid studied; a week later a maximum intravenous injection of salvarsan was given; the week following this injection was repeated and immediately after the thecal canal was drained. This method of alternate weekly injections and injections plus drainage was continued until the patient had received eight injections and four tapings. In addition they received one or more intramuscular injections of intramine. The patient was then placed on a potassium iodid mixture, (with mercury if the case was "meningeal"), and the course repeated in 2 or 3 months' time if he felt no better or if symptoms returned. This method was used in preference to the intrathecal injections of salvarsanized or mercurialized serum, because it was simple and safe and caused the patient little or no distress. Headache was but rarely met with and the patients were able to get down from the table immediately after the drainage, and go about their business for the remainder of the day.

L. C. JOHNSON.

KING, C. B.: *The Role of Focal Infections on the Nervous System.*  
*Illinois Medical Journal*, 1922, xli, 125.

*Chorea*.—Many cases of chorea are found in children who have inherited an unstable nervous system, but the disease is undoubtedly due to a focal infection in some other part of the body, yet it may

occur, in some cases, in whom there was a normal nervous inheritance, but in whom a more or less severe local infection, usually of the tonsils. There is a marked difference in virulence in some cases over others, also some children have greater resistance power than others.

*Multiple Neuritis.*—All cases are due to toxemia of some sort; most commonly, or at least best known, is that due to diphtheritic infection; may also be due to alcohol, arsenic or lead. He cites a severe case of multiple neuritis, which began in the lower extremities, which became completely paralyzed eventually. This case simulated an ascending myelitis; with removal of tonsils and a few teeth, the patient became able to walk with the aid of a cane, going up and down stairs without any great difficulty.

*Neuralgia.*—Herpes zoster, and some cases of neuralgia and painful nerve conditions, are due to secondary inflammatory processes involving the posterior root ganglia.

*Multiple Sclerosis.*—This condition frequently follows acute infection and has been traced to chronic focal infections. Woodbury has reported 6 cases of such character, which showed marked improvement, following removal of focal infections.

*Myelitis.*—Except those due to syphilis and tuberculosis, the great majority of cases of myelitis follow acute infections accompanied by exposure.

*Mental Diseases.*—Cotton, and associates, at New Jersey State Hospital, during the past 5 years, have studied all of their cases looking for focal infection in the teeth, tonsils, etc., and where x-rays showed unerupted third molar, these were extracted. They also carefully removed all other focal infections. The cases were not limited to any one mental disease, yet Cotton states that functional mental trouble is due to focal infection, and the treatment consists in finding the focus of infection, and removal of it. Old chronic mental cases did not show such good results, since the infection had existed long enough to produce organic changes in the brain. The author states that all cases of mental or nervous trouble, which show a high indican percentage, should have treatment directed toward clearing the bowel of infectious matter. Some have suggested establishing a fistula and daily irrigation, others internal treatment, which is slower, yet works great improvement if persisted in. A thorough abdominal examination should be made in all mental cases, with the



aid of barium meals, enema, and fluoroscopy, if patient is quiet enough to aid in examination. If surgical conditions are found, they should be remedied surgically. Holmes proved that by irrigating the colon, cleaning it out thoroughly, a number of cases in the early stages have recovered.

*Dementia Præcox.*—He believes the principle etiological factor is one of infection or toxemia of some infection; more likely from intestinal tract than any other source. This is indicated because nearly every case especially of catatonic type, early in the disease has a temperature and increased pulse. The author states that 60 per cent of the cases of præcox, if treated with foreign protein, injected with sufficient quantity to cause reaction, will overcome the initial infection before organic changes have taken place in the central nervous system.

*Confusional States.*—Marked states of confusion, up to the point of mania, in many cases clear up immediately, after treating the middle ear or mastoid infection, or occasionally frontal or ethmoid sinus infection.

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# INTERNATIONAL MEDICAL DIGEST

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## SECTION ON GENERAL MEDICINE

THALHIMER, W.: **The Mechanism of the Development of Non-bacterial, Chronic, Cardio-valvular Disease.** *Archives of Internal Medicine*, September, 1922, xxx, No. 3, p. 321.

From a histological study of the valves in various types of affections of these structures, Thalhimer endeavors to visualize the sequence of events in the case of patients who gradually develop valvular defects and cardiac inadequacy without any clear-cut history of infection which involved the heart. According to the theory propounded, a slight insult to one of the valves is encountered in the course of some systemic infection, the injury being of toxic origin rather than the result of the presence of organisms at the seat of injury. The valve becomes slightly fibrotic and therefore loses to some degree its natural elasticity and resiliency. This results in a slight abnormality of the circulation over and around the valve, with the formation of slight whirls or eddies or a slight slowing of the blood stream. In the presence of these abnormalities, some overstrain of the circulation might cause a minute injury of the endothelium of the valve, upon which would be deposited a tiny thrombus. Such a thrombus would become organized, then fibrosed, and incorporated into the valve, thus still further lessening the elasticity of the valve and rendering it more liable to still further minute injuries. A vicious cycle would be instituted which would ultimately lead to gross structural and functional defects of the valve. Obviously there would be no symptoms or physical signs of valvular disease



until such a stage was reached. At autopsy it is a common occurrence to find mild degrees of thickening of the heart valves which have caused no murmurs or heart symptoms during life. The changes described above might well be responsible for the progressive deformity of valves originally damaged by an attack of rheumatic fever, or congenitally abnormal, and may contribute to the course of events in the case of valves undergoing the degenerative changes of atherosclerosis.

T. HOWARD.

WYNN, W. H.: **On the Treatment of Acute Pneumonia and Influenzal Bronchopneumonia.** *Lancet*, September 2, 1922, cciii, No. 5166, p. 493.

Pneumonia outranks tuberculosis as a cause of death. Its greatest mortality is between the ages of 35 and 55. The usual mortality in lobar pneumonia is 20 per cent and in bronchopneumonia 30 per cent. Since 1907 the author has used vaccine treatment. Its use must be begun early within 24 hours after the onset of the disease, and must not be delayed until the demonstration of consolidation by physical signs. In lobar pneumonia 100 million of mixed pneumococcus vaccine is injected. In the majority of cases the temperature drops on the next day. The injection is repeated every 24 hours until the temperature is controlled. Of those inoculated the first day the temperature became normal in 83 per cent in 24 hours and in 100 per cent in 48 hours. Of those injected the second day 57 per cent had normal temperatures in 24 hours, 71 per cent in 48 hours and 93 per cent in 3 days. Out of 49 cases injected within 3 days after the onset, only one death occurred.

Of 107 influenzal bronchopneumonias injected with pneumococci, hemolytic streptococci and influenza bacilli, 28 were injected the first day with 28 recoveries, 23 on the second day with 22 recoveries, 22 on the third day with 20 recoveries, 20 on the fourth day with 15 recoveries and 14 on the fifth day with 12 recoveries; 50 per cent of these cases had a normal temperature in 24 hours.

There is no danger of producing a negative phase if the vaccines are used early before the patients become sensitized. The author prefers vaccine treatment to serum treatment.

H. JOACHIM.

SIMPSON, K.: **Fourth Disease or Parascarlet?** *Lancet*, August 19, 1922, cciii, No. 5164, p. 381.

A series of cases (35) was studied which resembled scarlet fever in which the diagnosis was uncertain, and which occurred in a diphtheria ward. The onset was acute except that vomiting seldom occurred. Sore throat was not a dominant symptom and adenitis was not pronounced. The exanthem appeared on the first day of illness, extended to the cheeks from the sides of the neck, but did not involve the rest of the face. There was some puffiness about the eyes. The average duration of the rash was about twelve hours. It was erythematous with some punctuation about the flexures of the limbs. The color was a bright rosy red. The lower extremities were usually spared. The tongue was never of the raspberry type. Desquamation began about the fourth day. There were no deaths. The author thinks the disease is related to scarlet fever and suggests the name of parascarlet. He is of the opinion that it confers immunity to scarlet fever and makes a comparison between this disease and the relation of alastrium to small-pox.

H. JOACHIM.

KINLAW, W. B.: **Two Cases of Subdiaphragmatic Abscess Complicating Appendicitis.** *New York Medical Journal*, August 2, 1922, cxv, No. 3, p. 129.

The statistics of Lance (1909) on subphrenic abscess comprising almost 1000 cases indicate that about 20 per cent are caused by appendicitis, 30 per cent by lesions of the stomach and duodenum, 13 per cent by lesions of the liver or gall-bladder, and 37 per cent by miscellaneous affections (pancreas, spleen, large intestine, pleura and other organs).

Appendicitis gives rise to subphrenic abscess in various ways. It occurred in 20 out of a series of 2400 cases of appendicitis under Deaver, 4 of the patients recovering. The intraperitoneal variety was present in two-thirds of 106 cases of Eisendrath. He found only 6 left-sided cases due to appendicitis.

According to Barnard, special attention should be paid to the following points in diagnosis: (1) Previous history (usual causes



of the condition, mentioned above; (2) character of onset; (3) constitutional signs of pus; (4) abdominal signs and symptoms, including bulging during respiration, tenderness, rigidity, dulness or tympany due to perforation of air-containing viscus (a swelling due to subphrenic abscess is immobile because fixed by adhesions); (5) thoracic signs and symptoms; most important are dulness, associated with upward displacement of lung; diminution or absence of breath sounds, vocal resonance and vocal fremitus; amphoric resonance of abscess contains air; apex beat of heart may be displaced upward but seldom laterally; hoover's sign is of value in differentiating between empyema and subphrenic abscess (if the abscess is subphrenic the excursion of the costal border on the affected side is increased, being decreased on the affected side if due to empyema); (6) fluoroscopic examination shows fixity or lessened mobility of the diaphragm on the affected side; and (7) aspiration is dangerous unless followed by immediate operation, therefore should not be done until patient is ready for any operation that may seem proper.

In the first case reported here, the patient was aspirated for supposed empyema. A needle was inserted at the angle of the scapula, in the seventh right interspace, and 580 c. c. of pus was evacuated. Following this, the coughing stopped, the cyanosis became much less marked, respirations much improved, the child was able to lie down (which he could not do before without a violent attack of coughing with marked cyanosis) and was apparently much better. The child went to sleep and slept until the next morning (about 8 hours) when he became restless, the pulse was very weak. The boy died at 8.30 a. m. A necropsy was performed and the pathological diagnosis was: Bronchopneumonia, acute pleurisy (fibrinous), subdiaphragmatic abscess, gangrenous appendicitis, localized suppurative peritonitis, acute diffuse nephritis and acute toxic splenitis. The appendix was about 7 cm. in length, was retrocecal, and pointing toward the liver and gangrenous. From it ran a straight tract, which terminated in a large subphrenic abscess, which was intraperitoneally situated in the right posterior intraperitoneal subphrenic space. About 100 c. c. of pus still remained in the abscess cavity, which by the adhesions was apparently of about two weeks' duration. The needle, which supposedly was passing through a thickened pleura, had perforated the diaphragm without entering the pleura and gone into

the abscess cavity, which was bounded above by the diaphragm, below by the upper surface of the posterior portion of the right lobe of the liver, in front by the right lateral ligament and on the left by the reflection of parietal peritoneum covering the right surface of the vena cava.

In the second case, as is more usual, the abscess appeared as a secondary complication, of a perforated appendix, probably being due to direct spread of infection before or during the original operation. If the subphrenic abscess is due to spread of infection along the retroperitoneal lymphatics it seldom gives rise to symptoms so soon after the first operation. Two other cases of appendicitis complicated by subphrenic abscess have been reported by Dr. Ashhourst, in the first the abscess developed before operation, from direct intraperitoneal spread of infection; in the second it did not develop until six months after operation. In the 4 cases, 2 recovered and 2 died. These were observed in a series of 200 cases of appendicitis with complications (abscess, diffuse peritonitis, gangrene, etc.) requiring drainage of the wound.

J. ROSE.

D'ACIERNO, P. A.: **The Symptom Pain in the Diagnosis of Appendicitis.** *New York Medical Journal*, June 7, 1922, cxv, No. 11, p. 663.

The symptom pain in the right iliac fossa, though found in the majority of cases, is not constant, being absent particularly in cases of chronic latent appendicitis, or appendicitis with referred symptoms (appendix dyspepsia of Moynihan), appendicitis *juxtacecalis duplivelata*, toxic appendicitis, and cases of silent appendiceal abscesses giving metastases to other organs through the portal or the lymphatic system.

When present, the local pain is changeable in regard to its position, character, and time of its appearance.

As a rule in all acute cases the initial pains are of paroxysmal or cramp-like character, and referred to the epigastrium or to the mesogastric region, and almost always accompanied by nausea and vomiting, followed by pain, rigidity and tenderness in the right iliac fossa, a rise in temperature and an increase in the number of leukocytes



(Murphy). The subjective pain and tenderness in the right iliac fossa become evident as soon as the diffuse initial pain subsides.

The epigastric or mid-abdominal pains in children, generally over-shadow the pain in the right lower quadrant, being rapidly followed by symptoms of general peritonitis, due to precocious rupture of the appendix. There are, however, a limited number of silent cases of appendicitis which either clear up by spontaneous drainage into the cecum, or end by a slow process of gangrene and periappendicitis which form a localized walled off abscess. In chronic recurrent appendicitis the subjective pain, generally, is not referred to the right iliac fossa, but to the epigastric region, probably due to a reflex pyloric spasm.

The mere pain in the right lower quadrant, not accompanied by the other chronopathological symptoms, is not sufficient evidence of existing appendicitis, but of reflex origin, as in lobar pneumonia, typhoid fever, cholelithiasis, etc., else the symptom of a calculus in the right ureter, or of oophoritis, or oophorosalphingitis. Any appendectomy based exclusively upon the symptom pain in the right lower quadrant may spell failure as far as the therapeutic result is concerned, whereas, when performed early, in conditions referred to, it accomplishes a cure in about 96 1/8 per cent of all cases and 99 1/7 per cent in cases of localized appendicitis without peritoneal involvement (Lett, Deaver).

Other abnormal or pathological conditions of the abdominal organs, as for instance: A right floating kidney, movable cecum, ileocecal tuberculosis, adenitis of mesenteric glands, especially tuberculous, ileocecal actinomycosis, acute suppurative periostitis of the inner surface of the ilium, tabetic crises, anginoid pains due to sclerosis of the superior mesenteric artery, and other conditions, should always be borne in mind when making a diagnosis of appendicitis.

The occurrence of toxic appendicitis is rare and should be classed as fulminating appendicitis. There are a certain number of cases, characterized by transient tenderness and pain in the appendiceal region and by absence of other signs or symptoms of appendicitis, which occur sometimes in the course of some infectious disease (acute rheumatism, tonsillitis, etc.) or mineral poisoning (saturnism) or primary anemias (pernicious anemia) or anaphylactic disturbances

(urticaria, eczema, serum disease), and undoubtedly are due to toxic substances in the blood stream which stimulate and irritate the nerves of the appendix without causing any clinical sequence in it. For this group one uses the term appendicodynia.

The roentgenology of the appendix and the gastro-intestinal tract requires further development.

J. ROSE.

BASSLER, A.: **Dietetic and Treatment Regulations in Gastroduodenal Ulcer.** *New York Medical Journal*, June 7, 1922, cxv, No. 11, p. 670.

The treatment is begun with no food by mouth for 24 to 48 hours. During this time the patient is given calomel, quarter of a grain every 15 minutes for 8 doses, and Carlsbad salt twelve hours after finishing and at twelve hour intervals during the fasting period. Cool but not iced water is allowed to be drunk in sufficient quantities to allay thirst. Alkalies are administered from the beginning to neutralize any gastric juice secretion that may be present. During the fasting period 10 grains each of sodium bicarbonate and bismuth subcarbonate are given every 3 hours, 6 doses in all in 24 hours, there being an interval of 6 hours through the night.

The feeding is then begun. Three ounces of a mixture of equal parts of cream and milk are given every hour from 7 a. m. to 7 p. m. for 3 days (1835 calories), and the alkaline powders of sodium bicarbonate and bismuth subcarbonate. To keep the bowels open an alternating powder of sodium bicarbonate and calcined magnesia are given midway between each feeding. On the evening of the second day note is made if there is any free acid secretion residual. This is done usually at 11 p. m. with a fractional test tube. On the finding of a positive acid, the urine is voided and passed again in an hour, note being made of the reaction of the last specimen. If no acid is present in the stomach (even if the urine is slightly so) no alkalies are given throughout the night for the next 15 days of the bed treatment. Generally by this time the stomach is negative to acid, and the urine also. If acid is met with in the stomach and urine also, alkalies are given at 3 hour intervals throughout the night for the remainder of the days in bed in quantities to keep the urine alkaline or neutral to litmus paper.



On the sixth day a mixture of eggs, cream and milk is given at hourly intervals. The mixture employed is as follows:

	<i>Amounts at feeding</i>	<i>Milk</i>	<i>Cream</i>	<i>Eggs</i>	<i>Calories</i>	<i>Time</i>	<i>Number</i>
6 to 9 days	3½ oz.	25 oz.	25 oz.	2	2050	hourly	13
9 to 12 days	4 oz.	22 oz.	34 oz.	3	2650	hourly	13
12 to 15 days	4½ oz.	20 oz.	44 oz.	4	3275	hourly	13

From the fifteenth to the twenty-first day the feedings are in 5 ounce quantities of equal parts of milk and cream. Four eggs in the day are allowed cooked in any soft way. At this time 40 grams of sugar are allowed as lactose, maltose, etc. The feedings are extended to two hour intervals and the milk and cream mixture on thickly buttered toast at two meals are allowed. (This represents 3450 calories a day). Effort is made in these 6 days to lengthen the interval of feedings. For the first month out of bed patients are kept absolutely on the four above foods and a diet of 3780 calories a day is strictly maintained. This is temporary and the plan is not to partake of any solid foods. A glass of milk and a few crackers are taken between meals and before retiring, and a glass of milk at night if there is any distress. The diet consists of eggs, fresh milk and cream, well cooked cereals bread and crackers. The eggs are raw or cooked in any form or taken in the milk, which should not be too hot or too cold. Ground corn, farina rice, tapioca or sago are the best cereals. The bread should be one day old, and all forms of crackers and simple cake may be used. The total amount of food in one day should be: four eggs, one quart of milk, ¼ pound of fresh unsalted butter, 2 rolls or 4 slices of white bread, ¼ pound of cake or crackers, ½ pint of fresh cream, and ¼ pound of cereals. Eight powders a day are used, each taken one hour after a feeding. During this month, activities are restricted. After the eighth week the 8, 12, 4 and 8 o'clock meals are diversified with the following selections, plain milk being taken midway between meals and the alkaline powder one hour after. Pureés or creamed soups (barley, rice, peas, beans and celery); gruels (flour, craker, barley, indian meal and farina); baker's cake, pound cake, toast, rolls, jellies, and tapioca; puddings, rice, tapioca bread and cracker; custards, vanilla and chocolate, blanc mange, whips, and souffles; gelatine, ice cream, malt, and milk cocoa.

This is kept up for four months when the powders are changed to a combination of the two:

Magnesia usta	}	.....aa 15.0
Bismuthi subcarbonatis,		
Sodium bicarbonatum		
Sacchari lactis		
Fiat pulv.		

*Sig.* Take a teaspoonful in water after meals.

The general plan is to take three moderate sized meals at regular intervals, and supplemental meals of milk, cream, cocoa and crackers between meals and before retiring. Olive oil may be taken before the main meals in hypersecretion and hypermotility. Foods for main meals are: beef, lamb, and chicken, roasted or broiled, once a day; fish, any kind, not fried, once a day; cereals with cream in the morning; vegetables, well cooked and mashed, except green; white potatoes, squash, parsnips and turnips; desserts, made with milk, cereals and jellies; no fruits or nuts. If the symptoms become marked again, the diet should revert back to the four principle foods. The best drink is vichy or any alkaline water.

At the end of 6 months a normal diet is employed. The following list of foods that will be especially injurious and must not be eaten is given to the patient: One or two minute cooked breakfast foods; rough vegetables such as cabbage, sprouts, cauliflower, artichokes, asparagus, beets, celery, corn, cucumbers, kohlrabi, onions and tomatoes; foods which contain pits, seeds or skins, or nuts; canned or smoked meats or fish; lobster, crab, shrimp; cheese of any kind excepting cream cheese; too much pastry, especially that cooked in molten fat, such as doughnuts and fritters; foods that are too sweet, such as jams; fruits such as cherries, cranberries, figs, grapes, musk melons; coffee, strong tea, alcoholic and malt beverages.

During the second month x-ray treatments are given to the stomach, these usually being 6 in numbers, given at 5 day intervals. The patient is x-rayed on an empty stomach which contains 2 ounces of bismuth subcarbonate. The exposure at 24 inch distance is one minute, 5 to 10 milliamperes, 5 inch spark gap, 2 millimeters of aluminum and a thickness of sole leather used as filters. Occasionally some form of organic iron is taken by mouth or a ferruginous preparation by hypodermic injections.

J. ROSE.



WIESE, H. A.: **Some Difficulties in the Diagnosis of Peptic Ulcer.**  
*New York Medical Journal*, June 7, 1922, cxv, No. 11, p. 672.

Moynihan asserts that more errors are made in the diagnosis of gastric ulcer than in that of any other abdominal disorder; that duodenal ulcer is most often found in place of gastric ulcer and that frequently gall-stones are found when a gastric ulcer has been diagnosed; that gastric ulcer is rare, and that the x-rays and operative measures are alone corroborative means of diagnosis. The greatest number of ulcers are duodenal, about three to one.

In studying a series of 3000 cases of duodenal and gastric ulcer, Graham asserts that duodenal ulcers have a longer course than gastric. Ulcer extending over a long time favors the duodenum. Here, hemorrhage is less common than in the gastric. Night pains are usual, so that it is often confused with cholelithiasis. In gastric ulcer bloating is more frequent and coarse and large amounts of food are more likely to produce pain. Continuous symptoms are characteristic of gastric ulcer only.

There are no fixed lines to guide in the diagnosis and differential diagnosis. Moynihan asserts that chronic hyperacidity indicates duodenal ulcer, but only in uncomplicated and early cases.

In gastric ulcer, the pain occurs earlier in the course of digestion, and is intensified by a full meal. Robson believes that any one or all of the cardinal symptoms of gastric ulcer may be wanting. The pain is referred to the epigastrium, whence it radiates in various directions especially toward the left subscapular region. If the ulcer is at the cardia or along the lesser curvature, pain is evidenced after eating within a half hour. If at or near the pylorus, 1, 2 or even 3 hours after food is taken, whereas the pain is usually, later in appearing in the duodenal ulcer, and is relieved by taking food.

As digestion is frequently delayed in the evening, pain of this character usually awakens the patient around midnight; which is common in gall-stones. Epigastric pain is well marked with rigidity of the recti and may be localized or widely diffused, a specially tender spot being found in the dorsal region, a little to the left of the spine, opposite the ninth and tenth dorsal vertebrae.

Late in the course of gastric ulcer complications arise, as perforations, adhesions, contractures, dilatation of the stomach due to ob-

struction, and fistulae between the stomach and pylorus with adjoining organs or on the surface of the body; local peritonitis, ending in adhesions, suppuration and a localized abscess, abscess of the liver, pancreas or spleen, and pressure on or stricture of the bile ducts producing jaundice. Eggleston says: "More than 10 per cent of gastric ulcers were found to be penetrating; one that has burrowed through the posterior stomach wall into the neighboring organs or tissues, usually the liver or spleen. It is a perforating ulcer, but is so surrounded by adhesions as to prevent the serious consequences which follow the escape of stomach and duodenal contents in the abdominal cavity. It is distinguished clinically, by greater severity of pain, greater local tenderness and the absence of relief after the ingestion of food and alkalies".

The acute and subacute perforations in gastric ulcer are most common upon the anterior wall. The chronic form occurs through the posterior wall. The prognosis depends upon the interval between the time of perforation and of operation, upon the size and character of perforation, and whether the stomach is full or empty.

Hemorrhage, generally is not fatal, but it depresses the patient. The amount of hemorrhage offers no idea of the size of the blood-vessel eroded. Large hemorrhages repeated at short intervals offer a grave prognosis. Here, the ulcer should be resected, cauterized or infolded.

Often the only symptom is the sudden, acute, short attacks of epigastric pain, rarely radiating in character, but which may radiate to the back if posterior perforation is impending. Recovery from the pain is usually sudden and complete, so that the most rational diagnosis would be gall-stones. Vague symptoms may point to the liver, while the gastric disturbance predominates.

In another class of cases there are mild digestive disturbances, as slight distention, slight regurgitation, or vomiting.

The other class of cases is that of chronic gall-bladder disease, with adhesions, duct obstruction, contraction, perforation and perhaps pancreatitis. When any of these conditions are present, the symptomatology is quite analogous to that of chronic gastric ulcer with perforation.

A diagnosis of ulcer is favored if the symptoms assert themselves from 15 to 30 years of age. Later in life, the presence of gall-stones



is more likely. When the attacks of pain follow at short intervals and from day to day, even when acute, it is oftener ulcer with perforation than gall-stones.

With acute pain, night after night, and constant distress and general gastric disturbance, the probable diagnosis is ulcer, unless hectic symptoms should supervene. Pain immediately after food and unrelieved by alkali brings into consideration appendicitis and cholecystitis. In the presence of irregular food distress, or pain, anorexia, gas and vomiting, appendicitis should be considered.

The x-rays should be a constant routine in the study of these cases.

J. ROSE.

FOURNIER, L., ET GUENOT, L.: **Treatment of Syphilis by Bismuth.**  
*Annales de l'Institut Pasteur*, 1922, xxxvi, p. 14.

Thanks to the experimental work of M. M. Sazerae and Levaditi, antisymphilitic therapy is enriched by a new "specific" bismuth. These writers have put beyond doubt the powerful curative action of this metal both in the experimental syphilis of the rabbit and in human syphilis. The authors have treated about 200 syphilitics with the different salts of bismuth, principally the tartrobismuthate of potassium and of sodium, and with related substances in oily suspension. The results obtained show that bismuth should be considered as one of the most powerful antisymphilitic agents. The treponema disappeared from the surface of the chancre, sometimes by the next day after the first injection, usually after the second; rarely did it persist after the third. Small erosive chancres were completely cicatrized in a few days; it takes one or two weeks for average chancres. Large or ulcerating chancres persist 20 or 25 days, but they rapidly lose their characteristics of specificity and take on the appearance of a banal lesion, the repair of which evidently takes a length of time comparable to its dimensions. The chancreous induration and attendant adenopathy are more speedily influenced by bismuth than by any other treatment and sometimes disappear completely in a few weeks. In 3 cases the treponema could not be found in the ganglions after the third injection, that is to say 7 or 8 days after the beginning of the treatment.

The treponema disappeared from the mucous plaques after the first or second injection. It is, as with arsenic the buccal plaques which are most rapidly cured. Plaques in the skin of the lips, on the palate, on the pillars and on the tonsils cicatrized completely in 4 or 5 days. When the treatment is begun at the appearance of the roseola, this is stopped in its development, sometimes after an exacerbation of 24 hours. This Herxheimer reaction may also be manifested in the case of the papular syphilids. The simple roseola is generally effaced in 5 to 10 days; the papules take a little longer to be resorbed. The general secondary phenomena, headaches, curvature, bone pains, etc., have yielded to the first injections. In a case of acute syphilitic meningitis, all the symptoms, headache, stiffness of the neck, Kernig's sign, etc., disappeared after 3 or 4 injections.

Bismuth treatment has had a remarkably rapid action on the symptoms of tertiary syphilis, gummata, osteoperiostites, large cutaneous ulcers, plaques, pustular, crusty, etc. Two cases of lingual leukoplasia were improved, without the disappearance of the lesions. The time of treatment is too short for a judgment of the action of bismuth in visceral or nervous syphilis.

Sometimes rapid, sometimes a little slower, the action of bismuth on the active symptoms of syphilis is undeniable. Indeed, none of the patients has presented new symptoms; no chancre treated before the apparition of the roseola, even if it was of a month's duration was followed by secondary symptoms. The study of the Wassermann reaction shows that the superficial cicatrizing action of bismuth is accompanied by a deep serologic action. A suspension of the insoluble tartro-bismuthate in olive oil at 10 per cent was used, also an aqueous solution of the ammoniacal citrate. Bismuth injections painful in the subcutaneous cellular tissue must be strictly intramuscular and be made with all the customary precautions used for oil injections. With an aqueous solution of the citrate one must be equally sure of not having penetrated a deep vein, as the toxicity of this salt is much greater in intravenous injections. Only in exceptional cases may the dose of 30 centigrams be exceeded in a single injection, and this dose should be reduced to 20 or even 10 centigrams in aged or debilitated patients, and in those with bad dentition. It is not yet possible to fix definitely the posology of bismuth as a specific agent,



but as a first cure of attack, one should inject 2 to 3 grams in a month, or a daily average of 10 centigrams. After making two or three injections of 20 centigrams a semi-weekly injection of 30 centigrams should be given. The only precaution for the patient to take is to see to good buccal hygiene. The authors have made 1,500 injections of bismuth without observing a single really important accident. The patients were in good general condition. Prudence should be used in treating patients affected with serious visceral lesions, especially those in whom the renal function is profoundly altered. If one excludes an elevation of a few tenths of a degree, which in some cases is produced the day after the injection, and is accompanied by a little fatigue and curvature, no general reaction occurs during the treatment. After some injections a polyuria of average intensity (2 or 3 liters) appears, and is usually of short duration. Rarely the urine contains a small quantity of albumin on the day after injection. A good many patients lost a little weight during treatment, regaining their normal weight shortly after. In the doses administered, bismuth has no toxicity.

The treatment, however, shows inconveniences of two kinds; local due to the injections themselves, and those due to the localization on the buccal mucous. Some few complained of severe pains for 2 or 3 days after the injection. Sometimes quite an intense local reaction with redness and swelling was produced. In 2 or 3 patients at the site of some injections, cysts containing a thready and oily liquid were noted. But these local symptoms are of very slight importance, and end in complete resorption.

The almost constant impregnation of the buccal mucosa, manifesting itself in a gingival border, sometimes of black gum plaques and a slightly bluish tinge of the tongue, and accompanied in some cases by a benign stomatitis is easily avoidable and easily curable. Bismuth may be recovered in the blood, in the cerebrospinal fluid; it is eliminated in the urine, the feces, the bile, the saliva and the sweat.

Bismuth is one of the most energetic of antisyphilitic agents, acting on most of the manifestations, especially on the contagious ones, whence its very considerable value from the point of view of social prophylaxis.

SCARLETT, H. W., AND INGHAM, S. D.: **Visual Defects Caused by Occipital Lobe Lesions.** *Archives of Neurology and Psychiatry*, September, 1922, viii, No. 3, p. 20.

One case demonstrated a hemianopsia of the macula. There was a bilateral lesion, one visual cortex being completely, the other incompletely, destroyed. Accurately charting the small central fields of vision revealed the characteristics of a bilateral hemianopsia of the macula. This case contradicts the views of Holmes and Lister, who stated that the macula does not have a bilateral representation.

The hypothesis is suggested that a minute overlap of innervation exists along the entire vertical line separating the retinal halves. Each half of the macula is thus in relation with the corresponding occipital cortex, and the fixation point, situated on the line of division, possesses bilateral cortical connections.

F. DAMRAU.

WHITE, P. J., AND VEEDER, B.: **A Study of 443 Cases of Hereditary Syphilis with Especial Reference to Results of Treatment.** *The American Journal of Syphilis*, July, 1922, vi, No. 3, p. 353.

This study was undertaken with the purpose in view of determining whether or not the end-results of the intensive work with hereditary syphilis during the period 1912-1920 were of such a nature that future work along the same line is indicated or justified. During this period 443 patients with the disease were observed and followed with adequate hospital, clinic, and social service facilities available at all times. It is impossible to state the exact cost but when the time and salaries of physicians and social workers, equipment, drugs, etc., are considered we are justified in estimating it at many thousands of dollars.

From the social standpoint we have found the group as a whole unsatisfactory and difficult to deal with. Lack of interest on the part of parents has led a large part of our material to discontinue treatment long before dismissal by the physician. While here and there families have been encountered who have coöperated most satisfactorily, their number is far overshadowed by the group of uncoöperative. Thus, out of 230 living patients in whom end-results are



known, only 52 followed out a thorough course of treatment; while 95 were absolutely uncoöperative. A middle group of 83 cases continued treatment with a fair degree of regularity for a time, but dropped away before discharged. Allowing for the 78 deaths in the group there are still left 125 patients who for one reason or another were lost track of and a large per cent must be included with the group of "uncoöperative". In our experience, in spite of intensive follow-up work, only a third of the hereditary syphilitic patients were given the benefit of a satisfactory or fairly satisfactory course of treatment, and we question whether this figure can be improved under ordinary conditions.

In discussing the results of medical treatment two viewpoints must be considered: first, the results of treatment in the individual case of hereditary syphilis; and secondly the results of treatment for the group of 443 cases as a whole. So far as the individual case is concerned our results show that a given case has a fair chance of clinical and serological recovery or improvement; that such recovery or improvement may seemingly take place on little or practically no treatment, but that the chances for cure or improvement are very much better for a case thoroughly treated with arsenicals and mercury than for one poorly treated. The earlier the treatment is started the better the result. If the given case has either serological or clinical evidence of involvement of the central nervous system, the chances for recovery or improvement are poor. One is justified, therefore, in treating a case of hereditary syphilis thoroughly with the expectation that it will be benefitted.

As regards the group as a whole the results have been disappointing. The infant mortality rate is three times the rate for infants from all diseases. This is despite treatment and is seemingly dependent upon the extent upon which the infant's nutrition and metabolic function have been impaired. Further, approximately one third the cases have had involvement of the central nervous system and as a group these have shown little improvement. Although active lesions in these cases have been checked, the residue of the infection leaves a child who as a rule belongs to the socially unfit. Considering the group of 308 cases whose end-results are known we find them briefly as follows: Cured or recovered 67 or 22 per cent; improved 108 or 35 per cent; unimproved 55 or 17 per cent; died 78 or 25

per cent. Thus we find that in our entire group, regardless of the amount of treatment received, 43 per cent were either unimproved or died. Despite the intensive work during this period only 22 per cent of our cases are known to have been cured or recovered.

Certainly this cannot be considered a brilliant showing. While one is justified in urging thorough treatment in the individual case, our group results clearly show that from a social or group standpoint the treatment of hereditary syphilis in the infant or child leaves much to be desired. The problem is best attacked by reaching the syphilitic woman or mother before and during pregnancy. This is all the more apparent when one takes into consideration the fetal mortality. While by no means advocating the neglect of the syphilitic child, we feel that the results to be obtained are so poor as a whole that our efforts should be directed much more to the prenatal clinic than to the pediatric clinic, and that the only satisfactory solution of the problem of hereditary syphilis is its prevention rather than its cure.

M. M. BANOWITCH.

McNABB, P. E.: **Post-Measles Pneumonia.** *The Military Surgeon*, September, li, No. 3, p. 313.

In 1917 measles stood first as the cause of death for enlisted men serving in the United States, death resulting almost entirely from the occurrence of secondary pneumonia. These pneumonias are described as lobar or bronchial in type, but many of the so-called lobar pneumonias were in reality diffuse bronchopneumonias. As to race it is noted that the mortality for the colored race was decidedly less than for the white soldiers. Measles patients who harbor *Streptococcus hemolyticus* in the throat upon admission to the hospital were found to possess an apparent immunity to secondary pneumonia by the Pneumonia Commission at Camp Pike. These observers noted many cases of contact infection in the measles and pneumonia wards, however, and recommend the segregation of streptococcus carriers as determined by frequent throat cultures. Bacteriologically the pneumococcus, *Streptococcus hemolyticus*, and the influenza bacillus have been the organisms most frequently found in post-measles pneumonia. At Camp Sevier the pneumonias were universally due to the pneu-



micrococcus, usually Group IV according to Vaughn and Schnabel. However, the *Streptococcus hemolyticus* has been most frequently described as the causative factor in this disease. Its presence in the throats of from 5 to 20 per cent of men before enlistment or draft seems definitely established. That this percentage increases greatly after a few months of living under conditions encountered in the great army camps also seems to be generally accepted.

F. SCHROEDER.

LYONS, R.: **Pulsus Alternans: Its Significance and Recognition by Ordinary Clinical Methods.** *Southern Medical Journal*, June, 1922, xv, No. 6, p. 431.

Six cases are reported and the author observes that from so small a number no deductions are possible, but he is impressed by the fact that if blood-pressure readings were performed more carefully, bearing in mind the possibility of the presence of pulsus alternans, this symptom would be more frequently detected than it is at present. Owing to the fact that graphic records are usually only taken of cases which show an irregular cardiac action, the presence of pulsus alternans is frequently overlooked, for here the pulse may be regular with little or no acceleration. Also pulsus alternans may be very transient rendering the taking of graphic records impractical in many instances. The careful use of the auscultatory blood-pressure method in all cardio-renal cases, especially accompanied by hypertension, will be of great value in detecting this condition.

The error of confusing the regular occurrence of late extrasystoles (pulsus bigeminus) with alternation of the pulse is the chief pitfall. It may be impossible in a certain number of cases to differentiate between the two without graphic records. According to White and Lunt the error of confusing the pseudo-alternation with true alternation, using the auscultatory blood-pressure method is about once in six times. It is possible that this error may be further reduced if we bear certain points in mind. (1) In pulsus alternans, in listening over the bend of the elbow at the time when all beats are heard, the sounds are perfectly regular, whereas, according to MacKenzie, in the case of pulsus bigeminus there is always a delay after the weaker. (2) In pulsus alternans, on auscultating the heart it

is extremely rare to note any difference in intensity of the strong and weaker beats, while in the case of regular premature contractions the premature beats are apt to be less intense. Undoubtedly errors will creep into any of the criminal blood-pressure methods. But even admitting that a mistake may be made in one out of six times, this percentage is not so great as to rob it of value, and should act as a stimulus to check such observations by graphic tracings. The auscultatory blood-pressure method, will, in a few instances, detect a slight alternation where tracings fail to reveal it. The delicacy of the method is demonstrated by the fact that an alternation of only 5 mm. of Hg can be detected. Furthermore in two patients it was possible to recognize the diastolic pressure of the alternate strong and weak beats and thus determine their pulse pressure independently.

The importance of detecting pulsus alternans is generally appreciated, but the gravity of the ill-omened symptom depends upon its persistence and association with other signs of cardio-renal insufficiency. Finally, its presence demands the removal of any exciting cause, as physical strain, infections, toxemias where possible, and is in general an indication for digitalis therapy.

G. A. DISTLER.

SWANSON, C.: **Treatment of Acne.** *Southern Medical Journal*, January, 1922, xv, No. 1, p. 27.

The acne bacillus is found in nearly every skin and may rest harmlessly in the sebaceous glands until conditions are favorable for its development. For acne to develop a predisposing cause is necessary and as a rule a deranged endocrine mechanism is this cause, as evidenced by the oily "seborrheic skin" which is seen in most cases, and also the appearance of acne at the beginning of puberty. Other predisposing causes seem to be seborrhea of the scalp, constipation, some form of gastro-intestinal trouble, foci of infection, and so on. In treatment the predisposing cause must be removed, the diet must be adjusted so as to correct any intestinal fermentation or putrefaction. Stock and autogenous vaccines have been disappointing; local treatment is important, that is the removal of comedones and evacuation of pustules. External applications of lotions and ointments of sulphur and resorcin are advised. The author uses x-ray treatment



in all his cases and finds it gives the most lasting and beneficial results. X-ray should be used in sufficient amount to decrease the size and activity of the sebaceous glands without affecting the texture of the skin.

G. A. DISTLER.

SCHWATT, H.: **Tuberculosis and Pregnancy.** *New York Medical Journal*, July 5, 1922, cxv, No. 1, p. 24.

Pregnancy is not an important etiological factor in the development of pulmonary tuberculosis. In many cases the disease develops following parturition and during lactation as a consequence of the debilitating effects of these periods.

Old tuberculosis of slight extent with physical signs of a latent and inactive peribronchial condition is rarely reactivated as a result of pregnancy. Latent and inactive parenchymatous lesions of the same extent more frequently become active and progressive. In early clinically cured cases pregnancy may be permitted under favorable social and economic conditions. All such patients should be carefully observed for signs and symptoms of reactivation and should be treated as potential cases of active tuberculosis. Primipara and women with pregnancies following rapidly one after the other are especially in danger of reactivation during pregnancy.

The majority of cases of active pulmonary tuberculosis in all stages and of quiescent or arrested disease, are unfavorably influenced by pregnancy. Such patients should be advised against pregnancy and instructed in the safest methods of contraception.

Before artificial abortion is resorted to the patient should have a thorough hygienic dietetic course of treatment and in suitable cases artificial pneumothorax, which is without deleterious effects on the course of pregnancy. If the disease remains active and progresses, interruption of the pregnancy is indicated during the first four months. Laryngeal tuberculosis is indication for early termination of pregnancy. After the fourth month interruption does not improve the prognosis of the pulmonary disease.

Premature induction of labor is practically always contraindicated. The operation of choice for emptying the uterus prior to the four months is vaginal hysterotomy under gas and ether anesthesia.

Sterilization to prevent future pregnancies is justifiable only under exceptional circumstances and only in multipara with living children, in women with rapidly following pregnancies and in working women.

J. ROSE.

CULBERTSON, W. L.: **Etiology of Eclampsia.** *New York Medical Journal*, July 5, 1922, cxv, No. 1, p. 19.

Eclampsia is due to a toxemia. A certain toxin circulating in the maternal blood causes the symptoms of pre-eclamptic toxemia and eventually the coma and convulsions. Formerly it was thought to be uremia, caused by a nephritis complicating pregnancy. The study of the pathology shows that the kidney changes are secondary and that the changes in the liver are more marked than those of the kidney. Bochar's theory of auto-intoxication claims the cause of eclampsia due to inability of the kidneys to eliminate the excess waste matter. Various authors have disproved this theory by showing that the toxic properties of these fluids are due to their concentration and when diluted up to the normal standard they have no toxic action.

During pregnancy the blood is invaded by certain fetal elements, the syncytial elements of the placenta, which but for the development of a hypothetical antibody would do harm if present in excess and in eclampsia this antibody is not present. Bandler quotes that placental secretion is the important factor, and it does not produce this annoyance in a large proportion of cases because some protective substances are secreted or formed anew. They come from the ovary corpus luteum, from the thyroid and adrenals, from the hypophysis, from the liver and from other structures in the body not yet recognized as taking part in this protective function.

On the whole the cause must be bound up with the presence in utero of the living growing fetus. The fetus may die as a result of the eclamptic poison or poisons. Seldom or never does eclampsia develop in a mother carrying a dead fetus.

The fetus must have reached an advanced stage of development, since eclampsia usually occurs in the later months of pregnancy. During pregnancy large quantities of nitrogenous substances are ex-



creted by the kidneys in a state of complete oxidation. It is assumed that this incomplete oxidation must be the result of some toxin of unknown origin circulating in the maternal blood and interfering with the oxidative function in the liver or the eliminative work of the kidneys or both.

In pregnancy a woman needs oxygen more than at any other time. In the later months of pregnancy her oxygen supply is limited owing to the diminished abdominal space and consequently limited excursions of the diaphragm. This is true in cases of external distention, *viz.*, in hydramnion and twin pregnancy and it has long been known that these two conditions predispose to eclampsia. The headache, edema and finally the convulsions are suggestive of a lack of oxygen. No other hypothesis helps to explain the fact that eclampsia usually occurs in robust and vigorous young women. These patients have a high oxidative equilibrium.

J. ROSE.

HALPERT, H.: Gall-stone Colic: Its Cause and Treatment. *New York Medical Journal*, June 21, 1922, cxv, No. 12, p. 755.

Gall-stones are probably caused by a hematogenous streptococcal infection of the gall-bladder and its ducts, this infection being accompanied by an altered cholesterol blood content. Naunyn concluded that cholesterol had its origin in the epithelial cells of the walls of the gall-bladder and ducts, which had degenerated and been thrown off as a result of the inflammation caused by the presence of the bacteria. This inflammation he called "lithogenous catarrh."

Thorkild Røvsing believes that the chief cause of calculus is the concentration and inspissation of the bile during the course of fevers or pregnancy, and that the infection follows the formation of calculi instead of preceding it, probably being caused by the irritation from the stone acting as a foreign body.

Edwin Henea, Jr., concludes "One of the characteristics of pregnancy is a progressive increase in the amount of cholesterol in the blood. At term a definite hypercholesterinemia is found and it persists for some time after the birth of the child. In typhoid fever, as soon as convalescence sets in, we note a decided rise above the normal in the cholesterol content of the blood. The influence of fever

is marked, and always reduces the amount of cholesterol found in the blood. The higher the fever, the more marked is this influence."

Patients with gall-stone colic may be divided into 6 classes: (1) Those in whom the presence of gall-stones cannot be demonstrated, and who give no symptoms referable to the gall-bladder.

(2) Patients who present symptoms only of chronic indigestion.

(3) Those suffering from recurrent attacks of severe colicky pain, usually in the right hypochondrium, radiating upward and toward the back. The attacks are due to the presence of a stone in the cystic duct; when this is dislodged, the pain ceases and in the interval between attacks, the patient is perfectly well.

(4) Those who suffer from recurrent acute attacks of colic, but unlike those of Class 3 are not free from symptoms during the intervals; having intermediate attacks of sudden digestive disturbance, sometimes almost as distressing as those caused by the impaction of the stones.

(5) Patients who have recurrent acute colicky attacks, and in the intervals between suffer continuously from so-called dyspepsia and general discomfort in the alimentary tract.

(6) Elderly individuals who do not have colic, but instead give a history of chills unaccompanied by fever. These chills represent the occurrence of colic in younger subjects.

All of these except Class 6, give a history of severe pain, coming on in the evening, or during the early part of the night. There is a sense of weight or of foreign body presence after eating, with attacks of discomfort following the ingestion of certain articles of diet. The cramp or colic is located in the upper right quadrant, sometimes without extension, or again radiating to the lumbar region, beneath the scapula; sometimes even as far as the left shoulder and on both sides of the neck. If the stone is in the cystic duct, the pain extends upward across the midline under the left breast, so-called pseudo-angina.

In cholecystitis and cholelithiasis, there is an increase in the amount of hydrochloric acid in the gastric secretion. The alkali normally present in the duodenum is not sufficient to neutralize all the acid pouring in with the stomach content. It is necessary to reinforce the alkaline strength of the duodenum by an overflow of bile from the gall-bladder which puts an added strain upon that organ, and so produces the colic, especially after dietary indiscretions.



Therefore considering the appropriate treatment, diet is the greatest consideration. All fried or acid substances must be excluded. Tobacco and alcohol must be abandoned. Small meals, taken at frequent intervals, four or five times a day, serve better than three larger ones. Drinking plenty of water is essential.

Administration of alkaline saline waters, and frequent small meals with plenty of green vegetables and fruit, tend to increase the flow of bile. Alkalies in hot water before and after meals should be taken regularly.

For the immediate relief, opiates are necessary and absolute rest, with hot external applications.

J. ROSE.

LANGSTROTH, F. W.: **Gonorrhea in Women from the Aspect of a Focal Infection.** *New York Medical Journal*, July 5, 1922, cxv, No. 1, p. 26.

Gonorrhea in women is not confined to any one strata of society, and is increasing in frequency. The diagnosis is often difficult, and is confused with chronic nonspecific infections of the cervical mucosa.

Gonorrheal infection of the cervix is always followed by secondary infections, which are often the cause of severe systemic and mental disturbances. Surgical removal of Skene's glands, Bartholin's glands, and the cervical endometrium is the only way in which the disease can be eradicated in the majority of cases.

J. ROSE.

STRECKER, E. A., AND KEYES, B. L.: **Ovarian Therapy in Involutional Melancholia.** *New York Medical Journal*, July, 5, 1922, cxv, No. 1, p. 30.

Although no definite connection between any of the symptoms of so-called involutional depression and ovarian function has been determined, it seems probable that in a limited number of patients the injection of ovarian extracts exerts a favorable influence on the general physical status and perhaps more particularly it lowers and stabilizes the blood-pressure, while possibly in a small group a corresponding helpful influence is exerted on the course of the psychosis.

J. ROSE.

NOBECOURT, P., AND FORGERON, M. H.: **Cutaneous Tuberculin Reaction in Whooping Cough.** *Archives de Medicine Des Enfants*, July, 1922, p. 304.

It seems that pertussis may suppress cutaneous tuberculin tests; this is more notable when the disease is of a grave character or complicated by bronchopneumonia. This "anergy", associated with the changes in the tracheobronchial glands produced by the whooping cough, favors the progress or initiation of tuberculosis.

W. H. DONNELLY.

VEAU, V., AND DOUBRERE, R.: **Foreign Bodies in the Duodenum.** *Archives de Medicine Des Enfants* June, 1922, p. 321.

The arrest of a foreign body in the duodenum is of sufficient rarity to induce the writers to report a case of a safety pin removed from that portion of the intestinal tract in a child of 11 months. They remark that it is especially long, pointed, objects which are retained in the duodenum. They usually pass easily through the esophagus which is almost rectilinear, through the stomach which is spacious, but have great difficulty in traversing the duodenum which is a fixed organ, with multiple curves and of small diameter. Therefore, of 27 cases where the nature of the foreign body was stated, 26 showed a long, thin, object such as a pin, a nail, a pencil, etc.

W. H. DONNELLY.

ANDRESEN, F. R. A.: **Acute Intestinal Obstruction.** *New York Medical Journal*, June 7, 1922, cxv, No. 11, p. 653.

In spite of the marked reduction of mortality in many conditions formerly considered invariably fatal, the hospital mortality in acute intestinal obstruction, even in the best hospitals has remained practically at a standstill. The mortality reported by most surgeons is over 40 per cent. The operative mortality in acute obstruction is comparatively low where operation is performed soon after the onset of symptoms, and increases rapidly as operation is delayed from day to day.



There are two groups:

(1) The cases of acute obstruction following a long continued period of abdominal or digestive symptoms, such as (a) due to deformities, bands or adhesions, congenital, postoperative or tuberculous; (b) following a gradual narrowing of the lumen of the bowel from pressure from without or protrusion or cicatrix from within, due to ulceration, diverticulosis, or new growth of the bowel; (c) following a long continued gall-bladder irritation, with the passage of a stone and finally intestinal impaction of the stone; (d) from impaction of any other foreign body in the bowel lumen; (e) from fecal impaction following a long continued period of constipation; and (f) paralysis of the bowel following operation or attendant upon an acute local or general peritonitis or acute pancreatitis.

(2) Where acute obstructive symptoms come on suddenly, without previous symptoms, as in cases of volvulus, intussusception, internal hernia (as, through a Meckel's diverticulum), or mesenteric thrombosis.

Dragstedt feels, (1) That it is impossible to sterilize the intestine by the use of chemical antiseptics, even when applied directly to the mucosa of isolated segments; (2) that, contrary to the opinion of Whipple and others, the mucosa of the alimentary tract does not elaborate an internal secretion necessary to life, nor a secretion disturbed by acute obstruction and producing a proteose accountable for the symptom complex of obstruction; (3) that the substances responsible for the toxemia in acute obstruction are produced by the action of intestinal bacteria on proteins or their endproducts; (4) that injury to the intestinal mucosa, especially that resulting from disturbance of the blood supply of the intestine, greatly facilitates the absorption of these substances.

The symptoms are vomiting, constipation, and abdominal pain. They may begin suddenly without previous warning or may have been preceded by other symptoms or by recent operation. The vomiting, in the beginning, is reflex, due to pylorospasm. It is not relieved by lavage and may occur immediately after ingestion of food or drink, in high obstruction, or, in low obstruction, later; in 2 to 4 days reverse peristalsis occurs. The vomiting becomes bile stained and then darker until fecal in character. By this time the patient's condition is such that even skilful surgery will result in a high mortality.

As to constipation, there is a history of no stool for several days, with various measures taken to relieve it. Enemas which in the beginning brought a slight fecal return, return clear, and no flatus is expelled. If the obstruction is low down, only a small amount of enema will be held by the rectum at one time (a pint or less). In intussusception and carcinoma blood may occur in the washings and may be passed spontaneously.

The abdominal pain may not always be severe. It is usually cramp-like in character, occurs all over the abdomen, especially mid-abdomen, and its severer paroxysms are accompanied by vomiting (reflex), which does not bring relief. The pain is aggravated at once by food and cathartics and not relieved by enemas. It is worse in the first few days after the obstruction, becoming less severe as the intestinal musculature becomes tired out. This peristaltic pain, is succeeded later by the pain of distention or the intense constricting pain of strangulation.

Tympany or distention is rare in the early stages. It is a late symptom, and signifies that toxic absorption is taking place or that strangulation or peritonitis have occurred. Visible peristalsis is of rare occurrence except in postoperative cases.

Shock is rare at the onset and is an indication that a complication has occurred. A rapid, feeble pulse and the general symptoms of collapse are evidence of strangulation, gangrene, or peritonitis. A palpable mass may occasionally be observed, especially in carcinoma, impaction, and intussusception. Proctoscopy may show a carcinoma or an intussusception. The temperature may be normal or subnormal until peritonitis supervenes.

The blood shows a moderate leukocytosis early, a marked leukocytosis later. The blood chemistry shows an increase in blood urea. The vomiting may be differentiated from that of pyloric stenosis by the fact that the gastric contents contain no food eaten more than 6 or 8 hours before.

The x-ray examination is not necessary, although a colon examination by means of an opaque enema may be of value in determining the site of exploration in suspected colon carcinoma.

The principal conditions from which acute intestinal obstruction has to be differentiated are: (1) Acute peritonitis, from any cause, in which the history, high leukocytosis, and abdominal rigidity serve as diagnostic aids, and in which, early operation is also indicated.



(2) Gall-bladder colic, in which the localization and sudden onset and cessation of the pain, the fever and the icterus help.

(3) Renal colic, in which the localization of the pain, the urinary and the radiographic findings are distinctive.

(4) Acute poisoning, from food or other agent, in which a history of taking poison, with diarrhea and either early death or rapid recovery after catharsis and suitable treatment, establishes the diagnosis.

(5) Pyloric stenosis, whose slower onset, delayed vomiting, and x-ray findings are of diagnostic importance.

(6) Acute hemorrhagic pancreatitis, which is difficult to diagnose, but the symptoms of which call for immediate operation.

(7) Uremia, in which the edema, urinary findings, blood findings, etc. helps.

(8) Lead colic, in which the chronicity, history and associated muscular weakness will be found.

(9) Angina abdominis and gastric crises of tabes, in which the pains are not persistent and do not last as long.

(10) Gastro-intestinal purpura and angioneurotic edema in which sensitization can usually be demonstrated and which clear up rapidly.

The treatment is early operation: (1) The reduction of the present high mortality in acute intestinal obstruction depends upon early operation, i. e., operation in the first 24 or 48 hours after obstruction occurs.

(2) Early operation implies early diagnosis and this can only be made by, (a) dissemination of knowledge of the early symptoms among the laity, so that medical advice will be sought early, and (b) instilling the importance of early diagnosis in the mind of the general practitioner who first sees the case.

(3) Medical and surgical textbooks, which pay scant attention to early symptoms and emphasize only the late symptoms, should be corrected.

(4) A presumptive diagnosis of acute obstruction should be made from the three cardinal symptoms, peristaltic pain, persistent vomiting, and obstipation.

(5) Operation should be done preferably under local or gas anaesthesia. The mortality rate is increased by 10 or 15 per cent every 24 hours.

STOKES, J. H., AND MCFARLAND.: *The Diagnosis of Early Syphilis.*  
*The American Journal of Syphilis*, July, 1922, vi, No. 3, 395.

A study of 231 cases of early syphilis, largely untreated, yields the following observations bearing on the diagnosis of early stages of the disease:

(1) The diagnosis of early syphilis has become a laboratory problem, divided between dark-field examination and the Wassermann reaction. Clinical criteria, while interesting, have lost most of their final diagnostic value. The primary stage especially, should no longer be over-emphasized in teaching.

(2) The dark-field examination showed 55 to 65 per cent of all genital lesions to be chancres outright.

(3) In our consecutive series, irrespective of age, 66 per cent yielded positive dark-fields; 80 per cent were positive the first week, and none were positive after the ninth week.

(4) Seventy per cent of the Wassermann tests made in the second week of the chancre were positive.

(5) The dark-field detected *Spirochete pallida* in twenty-three of twenty-four moist secondary lesions, and in 5 of 7 Wassermann negatives, early, or recurrent secondary cases.

(6) The dark-field on treated primary lesions is not hopeless. Eleven of 16 cases yielded positives. Nonetheless the withholding of treatment until after repeated negative dark-field examinations needs to be vigorously preached.

(7) Glandular aspiration of the satellite bubo of the chancre with dark-field examination of the serum yielded 50 per cent positives.

(8) Of 80 patients who had previously seen physicians we found that only 3 had dark-field examinations, one army man, one navy man, and one civilian.

(9) The practitioner's error in diagnosis was 30 per cent. In 24 per cent, treatment of some kind had been instituted while no diagnosis had been given the patient.

(10) "Chancroid" is still the chief diagnostic pitfall. The attitude that every genital lesion is potentially a chancre until proved otherwise is the safest for public and patient. Diagnosis of chancroid should not be made until four months after the appearance of the le-



sion and following repeated negative Wassermann tests. "Cancer", "tumor", "herpes", "felon", are the masquerades of extragenital chancres.

(11) One patient had been used as a transfusion donor before coming to the clinic, while he had a chancre, and was at the height of his spirochetemia, and 10 days before his secondary eruption appeared. The physician who used him as a donor had evidently made no inquiry into his condition.

(12) The Wassermann test in our secondary cases yielded the following: 92 per cent positive in treated and untreated, 95.7 per cent positive in those with slight treatment, and 98.5 per cent in those without treatment.

(13) We believe the repeated positive Wassermann test in secondary syphilis is a safer guide for the inexperienced than the characteristics of the eruption. If it is negative, the dark-field or the combination of findings may make the diagnosis.

(14) In the aggregate, 24 per cent of patients with florid secondary syphilis, a high percentage, could give no history of chancre, even though their secondaries were fully developed. This included a physician with secondaries, but no sign of a primary lesion (needle prick?).

(15) Women are especially apt to give no sign of a primary lesion concealed, short duration, and so forth.

(16) Maculate eruptions preponderate in our secondary cases. This we believe is an effect of special attention to lighting on our part, and is of great importance where inspection is used as a clue to syphilis as in industrial and military hygiene.

(17) More than half of our patients had infectious lesions when seen (68 per cent). More women than men had infectious lesions (75 per cent in contrast to 64 per cent), which makes them even more effective carriers than men. In this we are in accord with Fournier.

(18) Half of our patients had constitutional symptoms with secondary eruptions; much fewer in the præruptive stage (4 in 28).

(19) Women show a markedly greater tendency to constitutional symptoms than men (63 per cent in contrast to 43 per cent). In this we are also in accord with Fournier.

(20) The leading constitutional symptoms are sore throat (53 per cent), headache and head pain (31 per cent).

(21) Combinations of mild fever, sweats, loss of weight, asthenia, gastro-intestinal symptoms, nervous irritability, arthritic and myalgic pains with anemia are frequent and are easily confused with early tuberculosis. They justify a routine Wassermann test when tuberculosis is suspected, especially in early adult and middle life.

(22) Myalgia, arthralgia, and bone pain are easily confused with "rheumatism". The traditional nocturnal character is not a safe guide to syphilis, and is often absent.

M. M. BANOWITCH.

ROSE, R. H.: **Weight Reduction and Its Remarkable Effect on High Blood-Pressure.** *New York Medical Journal*, June 21, 1922, cxv, No. 12, p. 752.

Weight reduction through dietetic adjustment causes improvement in several important symptoms either due to or associated with obesity. The most important is the reduction of blood-pressure. The reduction is greater than could be obtained by the use of drugs.

Excepting Bright's disease, focal infection and incurable diseases, this method is a therapeutic measure which can be relied upon to reduce blood-pressure.

Cases amenable to this method of treatment maintain the low blood-pressure if the diet is normalized at the conclusion of the reduction. Some symptoms which depend upon the increased blood-pressure are relieved as the blood-pressure falls. These are shortness of breath, palpitation, edema of the lower extremities and albuminuria.

A drop of fifteen to twenty points in the systolic blood-pressure during the first week of the treatment is common for those starting with a blood-pressure around 200. A reduction of fifty points during the course of treatment is to be expected in such cases. These same patients starting with a diastolic blood-pressure between 110 and 120 will conclude the treatment with one between 90 and 100. For those whose blood-pressure is not above systolic 150 at the beginning a drop to between 120 and 130 can be expected.

One of the worst forms of headache is due to high blood-pressure. It is very successfully relieved during this method of treatment.

J. ROSE.



PHILIPS, J. M.: Prophylactic Treatment for Rabies by Means of Standardized Glycerinated Virus. *Journal Immunology*, September, 1922, vii, No. 5, p. 409.

The following technic was employed:

Young rabbits from a known source are inoculated intracerebrally with from 0.015 to 0.075 mgm. of fixed virus suspended in salt solution. When an animal is completely paralyzed and appears to be moribund it is killed by bleeding. This reduces the amount of blood in the brain and lessens the amount of foreign protein in each therapeutic dose, so that it produces less local reaction than we observed when using either the old cord method or the brains from rabbits which had been killed by drowning. To reduce the protein further we use the brain alone because the cord contains fewer infection units in proportion to its weight.

After its removal, the brain is weighed and rubbed to a smooth paste in a mortar; then glycerin is slowly added, care being taken to incorporate each addition thoroughly before more is added. This process is continued until the total volume of fixed virus and glycerin has reached such a point that each 0.1 c. c. of the suspension contains 15 mgm. of the fresh fixed virus.

Various sized amber glass ampoules are then filled up well into their necks with the glycerinated virus. Each ampoule is put into a separate test tube which contains a small pledget of non-absorbent cotton to protect the neck of the ampoule from breakage; a plug of this cotton and below it a wad of absorbent cotton are inserted into the tube to hold the ampoule in place. The tubes are placed in cold storage for a few hours. The mouth of the test tube is crowded full of pyrogalllic acid by ramming the tube into this material. The test tube is then inverted and 2 to 3 c. c. of 40 per cent caustic potash solution are added, followed by a pledget of absorbent cotton, and a good quality of rubber stopper is tightly inserted at once. If the ampoules are properly filled and the contents chilled the glycerinated virus will not change its position or escape from the ampoule. The object of this procedure is to absorb the oxygen in the tube. A label with the serial number of the rabbit, the date and the exact amount of glycerinated virus contained is placed on each tube. These units are stored upright in test tube baskets at  $-2^{\circ}$  to  $-4^{\circ}$  C. until required.

In addition to storage in the dark, the use of amber ampoules is a protection against the action of light.

Dilutions of the glycerin in distilled water are tested for the hydrogen ion concentration by means of the potentiometer method in order that we may be certain of its neutrality. Since glycerin is hygroscopic it must be kept tightly stoppered, and cannot be sterilized in the autoclave. We have found 180 dry heat for two hours to be satisfactory. Contact with many metals, specially aluminum that has been sterilized in the autoclave, exerts a deleterious action on the virus, therefore glycerin should be stored in glass containers, not in cans, and the ampoules should be filled with glass syringes to which gold canulas are attached.

The ampoules should be tested to see that the glass contains no soluble alkali by grinding samples in a mortar, adding distilled water, grinding further and then using phenolphthalein as an indicator.

The author has found no antiseptic suitable for use in these emulsions, even 0.25 to 0.5 per cent phenol destroys their infectivity with comparative rapidity.

Throughout the procedure the most scrupulous precautions are taken to insure sterility and the usual tests of the fresh brain and of the emulsions are always made. The sterility tests used are those required by the U. S. Hygienic Laboratory for licensed manufacturers.

Rabbits should never be killed until they are apparently moribund if one wishes to secure a virus of the greatest concentration.

Being greatly impressed with the reasons advanced by Dr. Harris in determining his treatment dosage, he decided to follow him very closely in this. Since 0.1 c. c. of our glycerinated virus contains 15 mgm. equivalent to approximately 1000 units (so-called minimal lethal or infectious doses) this amount is diluted with enough salt solution, containing 0.5 per cent phenol, to bring the quantity up to 2 c. c. This is the average daily dose from the fourth day after instituting treatment, and is continued from 11 to 19 days according to the severity of the bites and their location. In children under 5 years of age the average daily dose is 1.5 c. c. In some very severe face injuries, a larger dosage, as high as 3.5 c. c. to 4 c. c. daily is given during the first week. These dilutions are made daily, as



rabies virus in phenolized salt solution is viable for only a limited time. On account of the impossibility of standardizing the virus with absolute accuracy, we insure an approximate average in the total dosage of each case by using virus from a number of different rabbits in making up the successive days treatment.

For the first 3 days 60 mgm. of dead fixed virus is given daily in all cases. This is prepared by making a double strength mixture of the glycerinated virus in salt solution containing 0.5 per cent phenol; the dose of which is 4 c. c. on each of the first 3 days. The filled ampoules are placed in the incubator at 37° C. for 24 hours. During this time they should be agitated several times, otherwise the reducing powers of the brain tissue, which is not destroyed by its sojourn in glycerin, will keep the bottom of the containers in an anaerobic condition and some of the virus may survive. The use of virus rendered avirulent by carbolic acid was first adopted in 1906 by Fermi, but we have modified his technic. The reason for commencing treatment with some form of dead virus has been aptly stated by Harris. The practical usefulness of dead virus as an immunizing agent has been shown by Cumming and Semple. We can find no difference in experimental results between the Cumming "dialyzed virus" and carbolized material.

The authors believe that the technic has solved the question of an economical and permanent standardized supply of a potent virus. The remaining problems are to be found in the dosage and the duration of the treatment. As the dosage which we have given has been so efficacious and has not proved dangerous, they have hesitated to make a change. Certain clinical observations of the results of treatment in men and animals have deterred them from shortening the treatment. Only one fatal case occurred in 1540 patients treated, which certainly proves the efficacy of this particular virus.

\* W. LINTZ.

EINHORN, M.: **Recognition and Treatment of Minor Ailments of the Digestive System.** *New York Medical Journal*, June 7, 1922, No. 11, p. 681.

There are two types of minor ailments; acute and chronic. In acute gastritis there is anorexia, retching and sometimes vomiting;

also a feeling of fullness and tenderness to pressure over the region of the stomach. Acute duodenal catarrh manifests some sensitiveness in the right upper quadrant, and frequently jaundice.

In acute cholecystitis there is tenderness in the liver and beneath it. The liver is slightly swollen, and there is embarrassment in breathing deeply. Acute hepatitis shows similar symptoms, but the enlargement is more definite and the tenderness more pronounced.

Acute enteritis is accompanied by crampy sensations over the abdomen, slight nausea, frequent diarrhea, and tenderness to pressure in the lower abdomen.

Acute colitis reveals tenderness over the large bowel, cramps, constipation and difficult bowel movements with mucus alone and sometimes mixed with blood. In all these a rise of temperature is usually present. Acute appendicitis (catarrhal) reveals tenderness over McBurney's point. There is pain in the right iliac region. In the severer forms there is exudate in the right iliac area, spasm or rigidity of the right abdominal muscles and symptoms of infection (fever, nausea, vomiting and abdominal colic).

The treatment consists of rest of the affected organ and not interfering with symptoms unless they become a danger in themselves. The chronic minor ailments are functional disturbances, such as hyperchlorhydria, subacidity, nervous dyspepsia, nervous regurgitation, nervous eructations, anorexia, sitophobia, and habitual constipation.

Conditions going along for a long time with a train of symptoms not changing in character or gravity are functional. Ailments showing changes in the subjective symptoms but persisting for a long period of time without deteriorating the objective state of the organism are generally neuroses. Diseases lasting a few months, steadily progressing in severity, and changing the looks of the individual from a healthy to a sickly appearance, are organic and often malignant. Digestive disturbances persisting for some time, alternating with free intervals, and reappearing in a steadily severer form with shorter intervals of euphoria and longer periods of disease, are due to a benign organic lesion.

The main treatment of functional and neurotic disturbances consists in instituting a hygienic way of living and correcting any abnormal states discoverable in distant organs.



In hyperchlorhydria frequent eating, an abundance of butter, eggs, milk, vegetables and a small amount of meat; avoidance of spices and acids are required. In the way of medication alkalies, such as sodium bicarbonatic, magnesium, kaolin, neutralon, bismuth and calcium are beneficial.

In subacidity and achylia an egg milk diet with fine cereals and mashed vegetables and soups with some spices is at first given. Later on fish and chicken and other kinds of tender meat is added. Hydrochloric acid is administered for short periods of time, while stomachics, as nux vomica, gentian, condurango, quassia and cinchona are given for longer periods of time.

The habit neuroses require systematic suppression of the faulty habit. Ructus or aerophagia are combated by the patient's avoidance of belching. Regurgitation of the food must be suppressed, but if the food has reached his mouth, the patient should swallow it.

J. ROSE.

**KAMMERER, H.:** Relation of Bronchial Asthma to Other Diseases and a New Conception as to Its Pathogenesis and Treatment (*Beziehung des bronchial Asthmas zu anderen Erkrankungen und Therapie*). *Munchener med. Wochenschrift*, April 14, 1922, lxi, No. 15, p. 542.

Forty-three and a half per cent of the author's cases suffered from some type of neurosis. Some of the cases presented distinct vagotonic phenomena as colica mucosa, spastic constipation, laryngospasm, respiratory arrhythmias. The French classify asthma under *arthritismus* which includes gout, obesity, diabetes, urticaria, eczema and migraine. The exciting cause of asthma is probably some protein body which acts on the respiratory mucus membrane and vagus endings. Peptone injections relieve attacks.

The various cutaneous tests for the demonstration of sensitization are then discussed. He thinks that the only tests that can be relied on are the bacterial sensitizing reactions. Forty-eight and one-eighth per cent of the author's cases followed pneumonia. The relation between asthma and tuberculosis is still an unsettled question. Tuberculin injections have been of benefit to some cases. The author has had best results from vaccines prepared from sputum containing streptococci, pneumococci and influenza bacilli.

H. JOACHIM.

**KNOPF, S. A.:** **A Physiological Adjuvant in the Rest Cure of Pulmonary Tuberculosis.** *New York Medical Journal*, July 19, 1922, cxvi, No. 2, p. 65.

Comparative physiology teaches that the slow breathing animals live longer and are less susceptible to tuberculosis. Contrast the horse with 8 to 10 respirations a minute to the cow with 15 to 30 a minute. The turtle's respirations are so few they are hardly perceptible. If these animals are least susceptible, and a tuberculous lung is benefitted by restriction of its respiratory movements, as by artificial pneumothorax, then restricted respiratory movements and reduction in their number by voluntary effort is equally valuable as an adjuvant in its cure. Respirations can be reduced without discomfort to 8, 6 and sometimes 5 by restricting movements to the diaphragm. The patients feel better, general condition improves, and the physical examination shows less activity locally.

Graham Lusk says: "Under ordinary conditions, the production of carbon dioxide in the tissues controls the volume of the respiration. If the number of respirations per minute be decreased, the volume of air expired and inspired in each breath is automatically increased. The total gaseous exchange however, remains approximately the same. Under ordinary conditions of rest the quantity of oxygen absorbed is almost the same whether there be 7 or 15 respirations per minute." The reason for the improvement is the relative rest which is given to the lung by this process. Considerable benefit is also derived from limiting the respiration to the basal portion of the lungs. The patient is told to imagine that the respiratory movement begins in the toes of his right foot, traveling gradually upward as far as the diaphragm on the right side, then goes over to the left, and gradually descends during expiration of the left side. This results in a diaphragmatic breathing, and whatever quantity of air is inhaled passes mainly through the lower portions of the lungs, while the upper portions, where the tuberculous lesions are usually located, are put at comparative rest.

Sewell says: "When respiratory movement is limited to the diaphragm it is the bases of the lung that move most widely, the extent of motion rapidly diminishing upwards. When the upper chest expands, respiratory motion involves the upper lobes in proportion to



the excursion of the underlying ribs. Therefore, if we can inhibit respiratory motion in about the first four ribs, we could so restrict the motion of the principle areas of pulmonary disease that distribution of the toxins therefrom would be greatly reduced."

Contraindications are pain caused by the diaphragmatic breathing, and where there is primary involvement in the lower lobes, or where the process has extended to that region in the terminal stage. Mentally, the patient is more contented and restful in mind.

J. ROSE.

BARKER, C.: **Infection with the Organism of Vincent.** *New York Medical Journal*, July 19, 1922, cxvi, No. 2, p. 88.

The organism appears in two forms, a long, spindle-shaped, slightly curved or straight rod, and a spiral. Lately it has been concluded that it is a leptothrix. They vary from six to twelve microns in length and are scattered uniformly throughout the smears, in various arrangements, occurring in pairs end to end, forming obtuse angles, in irregular clumps, or radially about a central point. They stain well with aniline gentian violet and methylene blue, but most clearly with carbol fuchsin. They are Gram negative. The spiral forms are long and delicate with pointed ends presenting five to eight curves and actively motile. They stain less intensely than the rods and are demonstrated with dark field. It is an anaerobe and produces an offensive odor. It can be cultured in a one per cent peptone broth to which a piece of human brain is added and the media overlaid with liquid petrolatum to exclude oxygen. The cultures die rapidly. In young cultures, 48 to 60 hours, the organism is polymorphous, spores are frequent, long chains of bacilli appear, and vacuoles are seen. The disease is described as Vincent's angina, ulcerative angina, ulceromembranous angina, angina diphtheroides, angina chaneriform, pseudomembranous angina, and is quite common. The use of tobacco, trauma of mucous membrane, as after tonsillectomy, eruption of wisdom teeth, defective teeth, alveolar abscesses, scorbutic gums, syphilis, and mercurial stomatitis are predisposing causes, as well as measles, scarlet fever, and whooping cough. There are three stages in the pathology; the onset, characterized by congestion and edema; the formation of the pseudomem-

brane, and the period of ulceration. It is commonly located on the tonsils or edges of the gums, and extends to the soft palate, sometimes to the pharyngeal wall, or to the mucosa of the cheek. The gingivitis and angina may appear simultaneously or independently. The lesions are rounded and vary from half a centimeter up to an ulcer involving the entire tonsil. The pseudomembrane is a greyish white, sometimes yellowish. It is easily removed, and leaves a bleeding surface beneath, which again becomes covered with exudate. The ulcer becomes deeper but there is no lateral extension. Where the tonsils are affected there are varying degrees of adenitis. Clinically, the common picture is dry, sore throat, discomfort during swallowing, fetid breath, coated tongue, constipation and a varying degree of lassitude; the temperature may be slightly elevated.

Various complications are reported by observers, such as follicular tonsillitis, peritonsillar abscess, influenza, chronic interstitial nephritis, otitis media, septicæmia, arthritis, pneumonia, pleurisy, polymorphous eruptions, and appendicitis. It is transmitted from one to another by close contact. The diagnosis depends upon the microscopic examination of the exudate and demonstration of the organism. It is often confused with diphtheria and lues. The prognosis is good and the average duration is 12 days. Some cases last five months, and may require surgical intervention. When noma develops it is frequently fatal.

The various methods of treatment are; silver nitrate, chromic acid, potassium permanganate and zinc chlorid. One very satisfactory method of treatment is as follows: The pseudomembrane is removed entirely with a swab saturated with peroxide of hydrogen. The bleeding base of the ulcer is swabbed with a 5 per cent solution of salvarsan in glycerin, the swab rotated and the salvarsan rubbed deeply into the ulcerating surface. This is done twice a day at the start, later once a day. For practical purposes, 0.6 gram salvarsan in one ounce of glycerin makes the proper solution.

J. ROSE.

GREENBERG, D.: **Pulmonary Abscess.** *New York Medical Journal*, July 19, 1922, cxvi, No. 2, p. 98.

The following points should be considered in diagnosis:

(1) A history of either tonsillectomy or other nose and throat



operation, or an antecedent pulmonary infection, especially bronchopneumonia (influenzal).

(2) A progressively severe cough with large quantities of malodorous sputum, containing pus cells and yellow elastic fibers, but not containing tubercle bacilli, ray fungus or spirochetes.

(3) General evidence of infection.

(4) Signs of dulness and diminished breathing in one of the lower lobes, usually the right, with or without changes in the respiratory murmur and râles.

(5) X-ray finding of a circumscribed area of parenchymatous lung destruction.

(6) Aspiration in doubtful cases and the examination of the aspirated fluid or tissue.

(7) Where a broken down gumma is suspected a complement fixation of the blood and cerebrospinal fluid.

J. ROSE.

MORAWITZ, P.: **The Diagnosis of Pernicious Anemia** (*Die Diagnostik der perniziösen anämie*). *Munchener med. Wochenschrift*, April 14, 1922, lxi, No. 15, p. 557.

The most characteristic symptom is an achylia gastrica. In not one of the author's 80 cases was HCl present. Another important symptom is a glossitis. The tongue and cheeks are covered with vesicles, there is no coating on the tongue, and the number of papillae is diminished giving the tongue a smooth glistening surface. A third symptom which is suggestive is the neuritis and parasthesia of the extremities; sternal tenderness is a frequent symptom.

The most characteristic blood finding is a megalocytosis. The determination of a high color index lends some support to the diagnosis. Leukopenia is the rule. In 50 per cent of the cases the spleen is enlarged.

H. JOACHIM.

## SECTION ON LABORATORY AND RESEARCH

BOWMAN, K. M.: **Biochemical Studies in 10 Cases of Dementia Præcox.** *The Boston Medical and Surgical Journal*, September 7, 1922, clxxxvii, No. 10, p. 258.

As a result of a series of biochemical studies on 10 cases of dementia præcox no constant findings were obtained which would serve to explain dementia præcox on the basis of a simple dysfunction of a single gland. There was found a tendency towards a low basal metabolism and an abnormally sustained blood sugar curve, but such findings were not constant. In no case was there an increased basal metabolism nor was there a subnormal (flat) blood sugar curve.

M. M. BANOWITCH.

HITCHCOCK, C. H., AND LOVELAND, R.: **A Study of the Austin-Stillman-Van Slyke Index of Urea Excretion.** *Bulletin of the Johns Hopkins Hospital*, August, 1922, xxxiii, No. 378, p. 294.

The authors analyzed 27 cases in which the above method of urea excretory coefficient was determined. In borderline conditions as well as in cases presenting marked evidence of renal damage, and also during the relapses of pernicious anemia, there was found a definite lowering of the value of the coefficient. Hence it is concluded that the Austin-Stillman-Van Slyke coefficient of urea excretion may be of value in demonstrating renal insufficiency, and particularly in borderline cases, it deserves further study.

De F. LAYTON.



KENT, N. M.: **The Present Status of Renal Functional Tests.** *Annals of Clinical Medicine*, September, 1922.

**Water Test.**—Fifteenth hundred c. c. of water is given on an empty stomach at 8 a. m. Nine collections are made at half-hour intervals for the next 4 hours. The normal output in this period varies between 1200 c. c. and 1800 c. c.; the specific gravity should at least be as low as 1.003.

**Concentration Test.**—The patient is given a diet for one day consisting of 20 per cent solid food only; no fluids are given. The urine is collected at three-hour intervals. The specific gravity should reach 1.030.

A renal functional test that is simple in application yet gives valuable information is the phenolsulphonephthalein test. The concentration of urea and creatinin in the blood are of great value, but require much more laboratory technic and knowledge than the three simpler tests. They furnish further valuable data in cases in which the three other tests are definitely abnormal. They aid us one step further in obtaining data with regard to the extent of the renal damage. They are of great service in cases of urethral obstruction and also in semicomatose and comatose cases when it is impossible to obtain accurate collections of urine.

EGGSTON, A. A.: **A New Technic for the Preparation of Bacillus Acidophilus Milk and Its Therapeutic Value.** *New York Medical Journal*, June 7, 1922, cxv, No. 11, p. 683.

By this technic a milk is produced that is white in color, non-lumpy, with no odor and in which one can regulate the fat content. It can also be made with an acid or slightly sweetish taste, without altering the bacterial count. One pint of tap water is placed in a liter flask. For a sweet tasting milk, a heaping tablespoonful of lactose is added to the water, which is then autoclaved for 20 minutes under twenty-five pounds pressure. The water is cooled and a pound tin of unsweetened, evaporated milk is added to the flask, observing sterility. The mixture is inoculated with 10 c. c. of a stock culture of *Bacillus acidophilus* under aseptic technic, shaken and incubated for twenty-four hours at 99° F. The curd formed is soft, white and

slightly separated from the whey at the top. Shake the flask to break the curd, refrigerate, and the milk is ready for use. The acidity of the milk is controlled by the incubation period—the longer it incubates the more acid it becomes. The fat content may be regulated by varying the amount of water or milk.

There are some who cannot take milk for various reasons. In these cases use a lactose whey culture which is a satisfactory medium and gives a tremendous growth in 24 hours. Boil the milk slowly for 20 minutes. Let it stand for 30 minutes or until a pellicle forms. Remove the pellicle and gently boil, add one gram of sodium citrate to each liter of milk. Let it stand for 30 minutes, then boil 2 minutes. Add slowly 20 c. c. of a 20 per cent hydrochloric acid solution to each liter of milk. This coagulates the fats. Let stand for 45 minutes, then remove the fats by filtering through a towel or fine gauze. Bring the fat extracted milk to a gentle boil. Neutralize with 20 per cent sodium hydrate, titrating with litmus paper. Filter through a double layer of filter paper. After filtering dilute the pure whey three times. Take 500 c. c. of the diluted whey and dissolve in it 10 grams of peptone, 5 grams of salt, 10 grams of gelatine, and 100 grams of lactose for each liter of diluted whey. Filter this whey with the nutrients into the diluted whey and autoclave in liter quantities for 30 minutes at five pounds' pressure. After the whey has entirely cooled, inoculate with a 24 hour culture of *Bacillus acidophilus*. Incubate for at least 24 hours.

*Bacillus acidophilus* assists in the reestablishment of the normal biological action of the intestines and colon. This depends upon the following: (1) Removal of foci of infection from the upper digestive tract (teeth, tonsils, sinuses, gall-bladder) and the respiratory tract and from venereal and genito-urinary infections.

(2) Upon the efficient non-surgical mechanical drainage of the colon.

(3) Sufficient doses of pure cultures of viable strains of *Bacillus acidophilus* recently isolated from a healthy intestinal tract.

(4) The maintenance of *Bacillus acidophilus* domination by diet.

Clinically, intestinal infection produces many disorders and diseases: such as cardiovascular renal conditions; rheumatism; arterial disease; essential high blood-pressure; skin diseases; asthma; neurasthenic and psychasthenic states; neuritis; neuralgia; malnutri-



tional states; obesity; diabetes; chronic constipation; auto-intoxication syndromes; subacute or chronic appendicitis; ocular conditions; protracted convalescent states; chronic cholecystitis; hemorrhoids; syndromes characteristic of visceroptosis; mucous colitis and indefinite digestive disorders.

*Bacillus acidophilus* milk constitutes a means of giving enormous acidophilus doses in a palatable form. It constitutes a food product and therapeutic beverage. It is given in quart quantities, daily, until the differential bacterial count of the fecal smears show a 65 or 70 per cent dominance of *Bacillus acidophilus*, and then the dose is regulated thereafter by the percentage of domination maintained by diet. It is a biological measure and will suppress the activity of the putrefactive and pyogenic types. It is a biological intestinal antiseptic and promotes the physiological function of the intestinal tract in constitutionally benefiting the individual.

J. ROSE.

**ADDIS, T.: Renal Function and the Amount of Functioning Tissue.**

*Archives of Internal Medicine*, September, 1922, xxx, No. 3, p. 378.

Addis states that the unreliability of previous functional renal tests based upon a comparison of the blood urea and the urea secreted by the kidneys depends upon the fact that in the performance of these tests the kidneys were not asked to do all that they could do. The measure, then, was of what the kidneys happened to accomplish at that time, and not of their maximum capacity. He believes that we have an accurate means of determining the actual amount of functioning kidney tissue if we feed the patient large amounts of urea and water and then compare the blood urea with the kidney output. Under experimental conditions he has found that in the normal individual the amount of urea excreted in one hour is directly proportional to the amount of urea in 100 c. c. of blood sampled during that period. He states that when the urea secreting capacity is placed under a strain so that all the secreting tissue is called to full activity, in the absence of the effect of certain specific renal stimulants and depressants, the amount of urea in one hour's urine divided by the amount of urea in 100 c. c. of blood is directly proportional to the amount of secreting tissue in the kidney.

In carrying out the test, the patient is given about 1,000 c. c. of water, in which the urea is dissolved, at 6 a. m. If the patient's blood urea is known to be about normal, 30 gm. of urea are given. If the patient's blood urea is already as high as 60 mg. no urea need be given. At intermediate blood urea levels appropriate amounts of urea are administered so that when the first blood is collected it should have a concentration of between 60 and 90 mg. of urea per 100 c. c. At 7 a. m., and every hour thereafter until 11 a. m. the patient drinks two glasses of water. No breakfast is given. Urine is voided every hour, and between nine and noon the time should be exceedingly exact. Blood specimens are collected at 9.30, 10.30, and 11.30. The urea content of these specimens must be determined with a high degree of accuracy.

The index in 163 normal, individuals averaged 50.4. The standard deviation was 6.61 and the variability (the standard deviation as a percentage of the average) 13.1 per cent.

T. HOWARD.

BAEHR, G., AND LOEWE, L.: **Experimental Reproduction of the Specific Histopathology of Influenza.** *Archives of Internal Medicine*, September, 1922, xxx, No. 3, p. 307.

The authors recall the fact that the *Bacillus influenza* of Pfeiffer has been practically discarded as the cause of pandemic influenza through such work as that of MacCallum (*J. A. M. A.*, March 8, 1919, lxxii, 720) which demonstrated that although it might be present in the lungs of a large percentage of persons dying of the disease in one part of the country, it was correspondingly rare in other parts of the country, where, at the time it happened to be a less frequent resident of the upper respiratory tract. Olitsky and Gates (*Jour. Exper. Medicine*, 1921, xxxiii, 125) and Loewe and Zeman (*J. A. M. A.*, April, 1921, lxxvi, 986) independently succeeded in cultivating a filterable virus from the nasopharyngeal washings made early in the course of influenza, which is capable of producing lesions in the lungs of rabbits, identical with those found in human beings. Students of the pathology of this disease in its uncomplicated form have elaborated a histology which is, as Winternitz states, "almost as specific as that of any biologic reaction."



The authors summarize these characteristics as follows:

(1) Congestion, edema, and often minute hemorrhages in the mucus membrane of the trachea and larger bronchi.

(2) Diffuseness of the process.

(3) Patchy distribution of the pulmonary lesions.

(4) Profuse serosanguinous exudate which drips from the moist cut surface of the involved parenchyma.

(5) Hemorrhagic character of the lesion, the hemorrhagic exudate being seen microscopically to infiltrate the interstitial tissue and fill patches of alveoli.

(6) Aplastic character of the process, the inflammatory exudate being composed almost entirely of red cells and serum with an occasional endothelial cell but containing astonishingly few polymorphonuclear or other leukocytes.

The authors produced typical changes of this character in rabbits by the intratracheal inoculation of Berkefeld filtrates of the nasopharyngeal washings from early cases of influenza and of cultures of the filterable punctiform bodies from such washings. From a study of the histology of these lesions, they believe that the unusual nature of the pathological process in influenza is apparently due to the fact that the virus of this disease possesses a remarkable affinity for the vascular endothelium. The virus gains access through the respiratory passages and is rapidly absorbed through the mucus membrane. It then calls forth a profuse outpouring of serum and red blood-cells in patchy areas throughout the lungs, presumably because of its peculiar endotheliotoxic property. Many of the capillary loops show complete loss of tone and platelet thrombi are found occluding many capillaries and arterioles. This phenomenon was observed in the lungs of some of the earliest human cases of influenza, and can be regularly reproduced experimentally with influenza virus and influenza cultures, and is of considerable pathogenetic significance.

T. HOWARD.

LEDSBERG, E. G.: On the Photolability of Serum Complement. *Journal Immunology*, September, 1922, vii, No. 5, p. 389.

There has been shown by experiments that:

The light-destruction may be fairly well expressed by the monomolecular formula.

The rate of the destruction is low,  $k$  varying from 0.019 to 0.050.

The temperature-influence is small or none.  $u$  certainly does not exceed .002 or .003,—which signifies an increase in  $k$  of 1.1 to 1.7 per cent for  $1^\circ$  C. increase of temperature at  $27^\circ$  C.

Variation in lamp-distance causes changes in reaction-speed which do not differ essentially from inverse proportionality to the light-intensity.

Dilution of serum before radiating causes not only the expected decrease of complement strength, but also alters very irregularly its magnitude. It causes, too, an increase in reaction-speed, which, however, is not parallel to the dilution-amount.

The color of serum changes obviously during radiation, from orange to dull yellow, the opalescence increasing at the same time. This is accounted for in the colorimetry.

As regards the exactness of the measurements made with this method, the primary figures have a possible error of about  $\pm 10$  per cent. The graphically found values may be regarded as more exact (about 5 per cent possible error). The  $k$ -values are chiefly found to differ within  $\pm 12$  per cent from the mean, which may be regarded as quite satisfactory. The temperature variation in such experiment—being within  $\pm 0.4^\circ$ , may be disregarded in consequence of the insignificant temperature-influence.

W. LINTZ.

LOCKWOOD, C. B.: **A Comparison of Successive Aspirates of the Gastric Contents.** *New York Medical Journal*, June 7, 1922, cvx, 11, p. 693.

Different portions of the stomach contents aspirated in quick succession, through a small tube, show a moderate variation in physical character and acid contents.

The tube tip usually rests near the outlet of the stomach if the subject remain seated or supine. When small amounts are aspirated at regular intervals one gets the cycle of events, as they occur in the pars media and pars pylorica, the mechanically and chemically active portions of the stomach.

J. ROSE.



MACHT, D. L. AND FINESILVER, E. M.: **The Effect of Saline Purgatives on the Absorption of Other Drugs.** *Bulletin of the Johns Hopkins Hospital*, September, 1922, xxxiii, No. 379, p. 330.

The absorption of a large number of drugs such as the alkaloids, antipyretics, hypnotics, iodids, and digitalis, was studied by chemical and physiological methods in animal and man. It was found that all the drugs examined were markedly delayed in their absorption from the stomach and intestines when they were administered subsequently to or simultaneously with saline laxatives, the absorption and subsequent secretion of phenosulphonephthalein and sodium salicylate were markedly affected by saline purgatives, even when the former drugs were administered by intramuscular or intraperitoneal injection. Laxatives other than those of the saline group exerted no important effect on the absorption of the drugs from the stomach and intestines. The experiments speak in favor of a more extensive employment of saline laxatives in the treatment of toxicological cases, especially with phenol and mercuric chlorid.

De F. LAYTON.

OGAWA, I.: **A Study of the Precipitin and Complement Fixation Reactions With Tuberculous Exudates With Special Reference to Tuberculous Pleuritis.** *Journal Immunology*, September, 1922, vii, No. 5, p. 423.

This investigation was undertaken for the purpose of determining whether the immunological reactions of precipitation and complement fixation occur with pleural exudates of tuberculous origin, as additional means and aids for the differential diagnosis of pleural effusions. The necessity for diagnostic aids of this character has been impressed upon the writer since 1913, when he found large numbers of Japanese soldiers and many civilians in Mukden, South Manchuria, with mild pleuritis and exudates of unknown origin. At least 52 per cent of a group of 42 of these individuals yielded negative von Pirquet tuberculin skin reactions; cultures of the fluids from 21 were negative and tubercle bacilli were not found by smear methods. It is commonly believed that these "light pleurisies" are of tuberculous origin but this has not been proven and the exact etiology is unknown.

Since the demonstration of tubercle bacilli in pleural fluids of tuberculous pleuritis is frequently impossible and no other exact laboratory test being available, studies have been made with the precipitin and complement fixation reactions, and the results are summarized in this article.

These results indicate that in the exudates from tuberculosis of serous cavities, precipitins and complement fixing antibodies may be found, especially the latter when a sensitive antigen and technic are employed.

In the study of the Wassermann test with exudates and transudates in syphilis, Klauder and Kolmer observed uniformly positive reactions with inflammatory exudates when the reactions with blood sera were negative. Secretions from chancres yielded positive reactions before the syphilis "reagin" could be found in the blood sera indicating a local production of the antibody responsible for the Wassermann reaction.

The result of these studies in syphilis in conjunction with those reported in this paper, indicate that specific antibodies are to be found in the exudates of localized infections at a time when they cannot be demonstrated in the blood sera probably because of their high dilution in the latter. These exudates are readily adapted for complement fixation tests if special attention is given to the following technical steps:

The fluid should be centrifuged to remove the cells.

The fluid should be heated to 55° C. for fifteen minutes to remove complement, thermolabile hemolysin, thermolabile antilysin, if present, and the substance responsible for the proteotropic reaction. For these purposes longer periods of heating are unnecessary and result in a useless destruction of antibody, as shown by the studies of Kolmer and his associates in syphilis.

The fluid should be titrated for anticomplementary activity as they vary greatly in this property and cannot be employed in a fixed amount; similar findings were reported by Klauder and Kolmer in their studies of exudate and transudates in syphilis.

Since some fluids are markedly hemolytic it is advisable to use varying amounts beginning with one-half or one-third of the anticomplementary unit as employed in this study. The nature of the hemolytic substance sometimes found in these fluids has not yet been determined.



The antigen and complement fixation technic should be as sensitive as consistent with specificity. The antigen employed for tests with human fluids should be free of lipoids as prepared by Kolmer, in order to avoid cross complement fixation tests with tuberculous exudates from syphilitic individuals.

It is advisable to employ a control on each amount of exudate tested in order to avoid error with fluids which are hemolytic in large amounts but anticomplementary in smaller amounts.

With these technical considerations it is believed that the complement fixation test will prove of value in the diagnosis of tuberculous pleuritis of 15 days or longer duration.

Of these series of 12 tuberculous exudates, 42 per cent yielded weakly positive precipitin and 92 per cent well defined positive complement fixation reactions.

Human pleural exudates and transudates of non-tuberculous origin yielded uniformly negative precipitin and tuberculosis complement fixation reactions. In syphilis, however, positive reactions may occur due to the presence of the "reagin" in the exudate unless precautions are taken to remove the lipoids from the antigen of tubercle bacilli.

With the pleural exudates secured 15 days or longer after experimental tuberculous pleuritis in guinea pigs, 8 per cent yielded weakly positive precipitin reactions and 89 per cent strongly positive complement fixation reactions.

In experimental tuberculous pleuritis and pericarditis of guinea pigs and rabbits, precipitins and complement fixing antibodies are not usually found earlier than 12 days after infection.

These results indicate that in the exudates of tuberculous pleuritis, precipitins and especially complement fixing antibodies, are found in a large percentage and that a sensitive complement fixation test with special attention to certain technical features, may prove a valuable practical aid to diagnosis.

W. LISTZ.

BROWN, R. B.: Notes on Hemoclastic Shock as a Test of Liver Function. *Annals of Clinical Medicine*, September, 1922.

The patient is given no food after 5 p. m. of the previous day. The next morning, fasting, the systolic pressure is determined and

the leukocytes counted, three times at intervals of 20 minutes. The patient is then given 200 c. c. of milk. Widal has determined that it makes no difference what form of animal protein is administered as the reaction is not specific. Then at intervals of 20 minutes for one hour the leukocytes are counted and blood-pressure determined.

In normal individuals there is no fall in blood-pressure nor in total leukocyte count, sometimes, in fact, a slight rise in both. In those with disturbed liver function, the blood-pressure drops 10.15 or 20 m. m. of mercury while the leukocytes are diminished by  $1/4$ ,  $1/3$  or  $1/2$  or even more.

They consider no reaction positive unless there is a drop of at least 2000 in average leukocyte count.

KOLMER, J. A., AND TRIST, M. E.: **Studies in the Standardization of the Wassermann Reaction. XXVII. A Study of Factors Influencing the Titration of Antigen.** *The American Journal of Syphilis*, July 1922, vi, No. 3, p. 461.

*Conclusions* (1) The temperature and time of primary incubation of antigen, serum and complement, have a marked influence upon the results of anticomplementary, hemolytic and antigenic titrations of antigens.

(2) In conducting the anticomplementary and antigenic titrations the primary incubation should be exactly the same as employed in the main complement fixation tests; in the hemolytic titration the incubation should be the same as employed in the secondary incubation of the main tests. As a general rule turbid emulsions of alcoholic extracts in saline solution prepared by adding saline solution very slowly to the extract, were more anticomplementary than opalescent emulsions prepared by rapidly mixing extract and saline.

(3) Turbid emulsions were usually slightly more antigenic than opalescent emulsions.

(4) The manner of preparing emulsions had no influence upon the hemolytic activity of alcoholic extracts.

(5) Emulsions prepared by slowly adding the extract drop by drop or in small measured amounts to saline solution were less anticomplementary and equally antigenic as turbid emulsions prepared by adding the saline slowly to the extract; for these reasons emulsions should be prepared by slowly adding extract to saline solution.



(6) Serum greatly reduces the hemolytic activity of saline emulsions of alcoholic extracts of tissues and should be included in titrations for hemolytic activity.

(7) Filtrations of saline emulsions of alcoholic extracts of tissues through chemically clean and sterile earthen filters removes the anticomplementary, antigenic and hemolytic substances.

(8) Heat has very slight influence upon the properties of alcoholic extracts of tissues and does not serve for the removal of anticomplementary and hemolytic substances.

(9) The unit of anticomplementary activity should be the smallest of antigen producing beginning inhibition of hemolytic rather than complete inhibition; the unit of hemolytic activity should be the smallest amount producing beginning hemolytic rather than complete hemolysis and the unit of antigenic activity should be the smallest amount producing complete inhibition of hemolysis with a fixed amount of a mixture of syphilitic sera.

The principles governing the technic of anticomplementary hemolytic and antigenic titrations of alcoholic extracts of tissues for a standardized complement fixation test are given.

M. M. BANOWITZ.

VOEGTLIN, C., DYER, H., THOMPSON, J. W.: An Arsphenamin Derivative Suitable for Subcutaneous Administration. *The American Journal of Syphilis*, July, 1922, vi, No. 3, p. 526.

A derivative of arsphenamin prepared from arsphenamin, formaldehyd and sodium sulphite, has been studied experimentally.

(1) The drug appears to be well suited for clinical use on account of its great solubility in water, the stability of its solutions in the presence of air, and the absence of any local irritation following its subcutaneous injection.

(2) The toxicity of the drug is about the same as that of an average commercial preparation of neoarsphenamin.

(3) The trypanocidal power of the two lots tested is slightly less, weight per weight, than that of the average neoarsphenamin.

(4) The rate of excretion of the arsenic of the drug is of the same order as that of arsphenamin and neoarsphenamin.

M. M. BANOWITZ.

KOLMER, J. A.: **Studies in the Standardization of the Wassermann Reaction. XXVIII. A Study of Factors Influencing the Amount of Antigen to Employ in Complement Fixation Tests in Syphilis.** *American Journal of Syphilis*, July, 1922, vi, No. 3, 481.

*Summary and Conclusions.*—(1) The methods employed for titrating antigen and conducting complement fixation tests influence the amount of antigen to employ as the optimum dose for the most sensitive and specific reactions.

(2) When antigens are titrated and used in fixation tests with a fixed amount of complement as in the original Wassermann test, the degree of fixation by syphilitic serum is in proportion to the amount of antigen employed; that is, tests conducted with one-half to one-sixth the anticomplementary units of antigens yield stronger reactions than tests using smaller amounts of antigen.

(3) There is no constant relation between the anticomplementary and antigenic properties of antigens; an antigen used in an amount as large as one-half of its anticomplementary unit, may not prove perfectly antigenic and particularly plain extracts tested with water-bath incubation. For this reason and because of the practice of using a fraction of the anticomplementary unit may introduce an unnecessarily large dose of antigen, it is better to titrate for antigenic activity and use a certain number of antigenic units.

(4) With the methods proposed as a standardized technic for titrating antigen and conducting complement fixation tests for syphilis, the optimum dose of antigen varies from 5 to 15 antigenic units depending upon the kind of antigen.

(5) When complement is titrated in the presence of antigen and used in two units in fixation tests, reactions with syphilitic serum may be stronger with small amounts of antigen than with large amounts (prezone reactions). This is particularly true of antigens more anticomplementary than usual; it has not been observed with all antigens but only with a few.

(6) Prezone reactions have been observed with some complements and not with others; they are believed to be due to the influence of natural hemolysins in the larger amounts of complement demanded to overcome the anticomplementary activity of the larger amounts of antigen or to non-fixability of these large amounts of complement by certain syphilitic sera.

M. M. BANOWITCH.



GILL, W. D.: **The Use of Desiccated Blood Serum in the Selection of Donors for Transfusion.** *The Military Surgeon*, September, 1922, li, No. 3, p. 285.

Recent simplification in the technic of blood transfusion has eliminated many of the difficulties which formerly prevented its extensive therapeutic application, and with improvement in the tests for selection of donors, the operation has come into great favor and the dangers incident to the introduction of an incompatible blood into the recipient's veins have been materially lessened. If the red cells of a blood introduced into an individual's veins are agglutinated after introduction, a reaction is certain to follow which may assume serious proportions and even threaten the life of the individual.

Landsteiner, Moss and others, after examining the blood of numerous individuals in respect to their agglutinating reactions, have found that they may be classified into four definite groups. These observations have been of great value in simplifying the selection of the proper donor for blood transfusion and have made it possible to classify the prospective donors in advance.

The laboratory worker has been confronted with a problem in preserving the necessary serum with which to perform these tests. Fluid serum is ordinarily used for performing the test and is usually preserved by the addition of some substance such as phenol or glycerin. Sanford has devised a method, a modification of the Moss test, in which he uses serum dried on ordinary cover glasses. The writer has found that an equally advantageous method has been to dry the blood serum and store it in hermetically sealed containers and place a small amount of it in solution with normal saline when needed for a test. This method eliminates the use of preservatives which produces the cloudiness, precipitation and unsightliness evident in serums preserved by addition of chemicals. Blood serum dried and preserved in this manner has been used with satisfaction at the end of 6 months, its agglutinating power at that time being practically unchanged. Kolmer states that serum dried under ordinary conditions is satisfactory only for a period of 2 weeks when carefully preserved in a refrigerator.

The preparation of dried blood serum is simple and is as follows: The blood is collected in a small amount of 5 per cent solution of sodium citrate and the serum separated from its cellular constituents

by centrifuging. It is then placed in large platters before an electric fan and in a short time will be reduced to a gummy mass which is collected and placed in a desiccator over anhydrous calcium chlorid and allowed to remain for 24 to 48 hours, after which time it will be found in hard, dry lumps. These lumps are reduced to a fine powder and stored in a perfectly dry bottle, which is sealed to exclude air by coating the neck and cork with melted paraffin. The finished product is a finely divided, odorless, yellow powder which is completely soluble in normal saline solution. To reproduce the original concentration of the fluid serum 0.065 gram of the dried serum is required per cubic centimeter of normal saline solution; a slight deviation from exact measurements is of no practical importance.

To determine the blood group to which an individual belongs the following test is used: Two or 3 drops of the blood of the individual to be tested are collected in about 6 c. c. of 5 per cent solution of sodium citrate. This gives a suspension of red blood-cells highly diluted and evenly distributed. A loopful of this cell suspension is mixed with a drop of the previously prepared serum of a Type 2 individual on one end of a glass slide, and a similar preparation is made on the opposite end of the same slide using the serum from a Type 3 individual. After 10 minutes the preparation is observed under the microscope using a one-sixth objective. It will be observed by consulting War Manual No. 6 that it is only necessary to use serum of Types 2 and 3 in order to classify all types of blood.

F. SCHROEDER.

LEE, D. C.: A Contribution to the Action of Arsphenamin and Mercury on the *Treponema Pallidum*. *The American Journal of Syphilis*, July, 1922, vi, No. 3, p. 546.

*Summary*.—Arsphenamin in a dilution of 1:130 does not kill the *Spirochete pallida* within 12 hours. Neoarsphenamin in a dilution of 1:130 does not kill this parasite within 12 hours. Silver salvarsan in a dilution of 1:125 does not destroy it in 12 hours. Salvarsanized and neosalvarsanized serum from blood drawn at 2-hour intervals after injection for 12, 24, 36, and 48 hours does not kill the treponema. Salvarsanized tissue extract 24 hours after injection kills the treponema in 6 to 12 hours. Salvarsan exerts its action on the *Treponema pallidum* by combining with the cellular protein produc-



ing an arsenoprotein which is detrimental to its growth, starting retrograde changes in the parasite which makes it an easy prey to the protective powers of the body. Mercury and its preparations are direct chemical poisons to the treponema.

M. M. BANOWITCH.

MORRISON, L. F.: **On the Origin and Nature of Alexin (Complement) in Guinea-pig Blood.** *Journal Immunology*, September, 1922, vii, No. 5, 435.

A far more powerful alexin, or complement, ready for immediate use, is obtained by the defibrination, centrifugalization and removal from the cells of guinea pig blood than is obtained by the usual method of allowing the blood to clot and removing the serum after it has been allowed to stand on the clot for 24 hours.

The same time and temperature relations, as have been worked out for clotted blood serum alexin, hold true for the defibrinated blood serum alexin content.

The leukocytic theory of the origin of alexin, is not tenable when the data detrimental to such theory, now available, are taken into consideration. The experimental evidence presented showing the apparent inactivity of either the red or white blood corpuscles to produce alexin, together with the fact that blood plasma contains large amounts of alexin, offer themselves as strong arguments against such a theory.

There is a gross difference between serum inactivated by heating to 56° C. for one hour and serum allowed to stand at room temperature until it has lost its alexin content, in their reactivity on the addition of fresh guinea pig serum, high in alexin content. This difference is due to the absorption of the alexin of the fresh serum by the larger molecules of the heated serum. The reactivation of the old serum may be explained by the enzymatic nature of alexin, one being more susceptible to the detrimental effects of time and temperature than the other.

Fresh guinea pig serum allowed to stand at room temperatures for several days showed no further evidence of "complementoids".

W. LINTZ.

## SECTION ON PEDIATRICS

**BELOT, J.:** **Diagnosis of the Nature of Tracheo-Bronchial Adenopathy In the Child.** *Archives de Medicine Des Enfants*, September, 1922, p. 537.

It was found in a series of 100 cases that they could be divided into three categories. The first is where there is a history of tuberculous parents, or, prolonged exposure to tuberculosis, a bad state of general health and a pronounced adenopathy and periadenitis.

The second is that of children of tuberculous parents, or subjected to prolonged exposure, with a fair general condition and moderate adenopathy.

The third is where contagion cannot be established, the general health is good, and the adenopathy slight.

The percentage of positive tests, (whether the Besredka or the cuti-reaction), was in accordance with the grouping above set forth. There was quite a discrepancy between the two tests, which, in the author's opinion, means that the skin reaction indicates especially a tuberculosis in the past, whereas the Besredka test is one of actual progressing tuberculosis. It would seem that a frankly positive Besredka reaction is an argument of great value in favor of the tuberculous nature of the adenopathy in a given case.

W. H. DONNELLY.

**COMBY, J.:** **Prolonged Febricula in Children.** *Archives de Medicine Des Enfants* August, 1922, p. 449.

This article reports 22 cases of the writer's which, with a review of the literature which justify the statement that prolonged febrile conditions in children without apparent cause are not mere "accidents of growth". They are often attributable to latent tuberculosis, especially a tracheobronchial adenopathy; however, fortunately, most of them are due to atypical rhinopharyngitis, chronic appendicitis, constipation, and occasionally to thyroid instability. The treatment should be indicated by the origin of the trouble, and before laying down a course of therapy, one should attempt to make an exact diagnosis which may be extremely difficult.

W. H. DONNELLY.



LAURENT, M., AND ABEL, E.: *Staphylococcus Septicemia and Meningitis*. *Archives de Medicine Des Enfants*, August, 1922, p. 478.

A case is reported, in a boy of 8 years, of staphylococcic septicemia with meningitis of the same origin. Both blood and spinal fluid gave a positive culture of this microorganism. The case went on to a fatal termination and autopsy verified to clinical diagnosis. The focus of infection was in the lesser trochanter of the right femur with a cellulitis of the thigh. The various methods of treatment are reviewed, such as intraspinal injections of colloidal metals, vaccine therapy, etc.; and, while all these methods are of uncertain value, the writers are inclined to favor the vaccine treatment as presenting the best outlook for the future. Inasmuch as staphylococcus septicemia has a mortality of 75 per cent, nothing should be neglected in treatment which offers any hope of success.

W. H. DONNELLY.

BOYD, G.: *Nephritis in Children*. *American Journal Diseases of Children* May, 1922, xxiii, p. 375.

The author conducts an investigation into the functional pathology of the nephritides in children, tabulating the etiological factors, the clinical findings paralleled with laboratory findings, which included daily urinalysis with specific gravity, quantitative albumin, chlorid estimation, and microscopic findings. It also comprehended blood chemistry findings, concentration tests, sodium chlorid tolerance, water tolerance, and phenolsulphonephthalein excretion tests. The detail of these tests and the expected norms were stated.

The cases reported were classified as:

- (a) Acute glomerulonephritis
  - (1) Resolving
  - (2) Non-resolving type
- (b) Chronic glomerulonephritis
- (c) Nephrosia.

(a) The etiologic factors were acute infections, more especially upper respiratory infections with tonsillar involvement predominant. A table showed acute cases which recovered to be characterized by acute infectious process, no temperature, edema, suppression of urine, albuminuria and hematuria, all of which gradually resolved

within about two months, the normal output usually being reached within two weeks. The non-protein nitrogen, blood sugar, creatinin, and plasma chlorids were very little altered in these cases.

(b) The acute nonresolving cases showed identical signs and symptoms except that there was temperature rise, occasional blood-pressure increase, anemia was pronounced, and functional tests revealed early unfavorable concentration tests, poor phenolsulphonaphthalein, higher quantitative albumin output, poor chlorid excretion, a high fixation of specific gravity being prominent. The blood examination in these cases was nonilluminating.

(c) The chronic cases showed anemia, some slight edema, various types of casts, a constantly poor concentration power, poor chlorid excretion; high nonprotein nitrogen in the blood, but good water excretion.

(d) The nephrosis cases were limited to ones which terminated fatally within a day; showing high albumin, few cellular elements but definite postmortem tubular changes so typical of nephrosis.

Tests of renal function give invaluable aid in determining the prognosis and line of treatment. The concentration test and the determination of the blood nitrogen constituents furnish the most reliable data. The general prognosis in the series showed a 50 per cent complete recovery. Clinical guides, tabulated, pointed to edema of over one month's duration, hematuria after one month, and high blood-pressure maintenance, to be signs of serious renal pathology. Laboratory signs of unfavorable augury were fixation of specific gravity, especially at a high figure; phenolsulphonaphthalein output of 50 per cent total or less; blood creatinin over 3, and high nonprotein nitrogen. Relapses occurred frequently in the more severe cases, and of themselves justify a bad prognosis.

Early uremic signs were found to be persistent vomiting and high blood-pressure.

Pathologically, the most common lesion in the acute cases was a glomerulonephritis of the intracapillary type, accompanied by more or less degeneration in the cells of the convoluted tubules. The chronic cases showed the same lesions as the acute cases, plus scarring and fibrotic changes. In the nephrosis cases tubular changes predominated.

All these cases were kept in bed until recovery; all were started on milk diet from 1000 to 1600 c. c. total in 24 hours, depending upon



the age. Cereals, milk puddings, and at later dates, fish, chicken and eggs, were added, to a maximum of 40 to 50 grams of protein daily in the favorable cases. Calcium lactate, suggested by the work of Howland, helped in the reduction of edema; hot stupes over the kidneys seemed more helpful than hot packs (changes due to hot packs found not appreciable in proportion to shock of pack). Blood transfusion was used as a supportive measure in uremia and in the more severe anemias.

C. A. WEYMULLER.

**PESHKIN, M., AND ROST, L.: The Incidence of Protein Sensitization in the Normal Child.** *American Journal Diseases of Children*, January, 1922, xxiii, p. 51.

The authors purpose to give data on the relative frequency of positive protein sensitizations in apparently normal children with a view to prevention of later sensitizations, thinking particularly of asthma; and also to demonstrate the incidence of sensitization to horse serum.

Five hundred and two children of Jewish descent, ages 2 to 15, had 9406 tests performed, it having been previously shown that these were apparently normal children as to any anaphylactic history. The technic was that as outlined by Walker, a linear scratch with a control at the elbow and one at the wrist was used. The subcutaneous test was preferred to the intradermal. Fresh proteins were used each 5 days, the controls were N/10 sodium hydrate, and the readings were made after a half hour. The standard was that of Walker. Particular attention was called to the pseudo-reaction which consists of an erythema, sometimes disappearing within 10 minutes, sometimes appearing late. The control decides.

The authors concluded that (1) About 10 per cent show doubtful positives (oftenest in rye, an essential of this dietary) decreasing with the age of the patient, showing a progressive desensitization.

(2) Foods were the commonest offenders, the essentials predominant, and frequency in normal and abnormal subjects.

(3) There is practically no danger of anaphylactic reaction in the administration of diphtheria antitoxin.

(4) All reactions above the control are considered as positives and are potential anaphylactic cases.

(5) Prophylaxis in apparently normal subjects is practical and necessary, although there are no symptoms present.

C. A. WEYMULLER.

COMBY, J.: **Case Report. Astasia-Abasia in a Girl of Thirteen Years with Rapid Recovery.** *Archives de Medicine Des Enfants*, September, 1922, p. 543.

This case quickly responded to a cold pack morning and night with one half gram each of sodium salicylate and sodium bicarbonate three times daily.

W. H. DONNELLY.

SHIPLEY, P., MCCOLLUM AND SIMONDS: **Is There More Than One Kind of Rickets?** *American Journal Diseases of Children*, May, 1922, xxiii, p. 91.

In the experimental studies carried on by the authors on rats, and accompanied by histologic studies it was indicated that, when a rat is deprived of certain active light rays and an unidentified factor contained in cod-liver oil, a pathologic condition corresponding to rickets in humans producable by dietary by (1) diminution of phosphorus and pushing calcium or (2) by lowering calcium and maintaining phosphorous concentration. It was believed that in the human, similarly deprived and regulated, the same forms are producable.

Two main forms of rickets suggested, one characterized by low blood phosphorus, and normal or nearly normal blood calcium (low phosphorus rickets) and a second with low calcium and normal or nearly normal phosphorous concentration (low calcium rickets). If the foregoing is true, tetany relation appears to be that tetany is an essentially nervous manifestation of low calcium ion, ricket an expression of disturbance of relations between calcium and phosphate ions of the body fluids. Association is frequent because rickets is a disease in which calcium ion is subject to many variations. Rickets and tetany occur independently. Tetany is essentially associated with a low calcium type of rickets.

Etiology of rickets seems as varied as that of tetany; any influence altering calcium to phosphorus ratios might ultimately produce disease.



A true renal type of rickets believed possible, and rickets accompanying alimentary anemias seems a different type than ordinary.

C. A. WEYMULLER.

SUZUKI, T.: **Influenza in Children, Especially Nurslings.** *Archives de Medicine Des Enfants*, April and May, 1922, pp. 193-268.

*April.*—Suzuki has studied, radiographically, cases of typical influenza pneumonia before the appearance of physical signs and concludes as follows: (1) The appearance of physical signs is noted on the average on the sixth day of fever, whereas radiography reveals on the second day, or even before, the characteristic shadow of pneumonia.

(2) The grippe pneumonia exists from the beginning of the illness, but cannot be diagnosed by ordinary means before the sixth day, but by the x-ray one may make a diagnosis practically at the onset of the illness.

(3) The x-ray findings are not necessarily parallel to the physical signs, but in general the shadow becomes more intense after the appearance of the physical signs.

*May.*—Suzuki is convinced that influenza is a pneumonia caused by the pneumococcus; that pneumonia is not a complication of influenza but is influenza itself. In support of this opinion, he cites animal experiments where he isolated pneumococci from children ill with influenza, and children dead from that disease.

These pneumococci diluted with physiologic saline were injected into the veins of normal, healthy, rabbits which died of hemorrhagic pneumonia in from 2 to 5 days.

X-ray examinations made daily showed exactly the same process in rabbits as was noted in children.

W. H. DONNELLY.

WEILL, E., AND DUFOURT, A.: **Grippe in Children (Epidemic of 1918-1919).** *Archives de Medicine Des Enfants*, July, 1922, p. 385.

The epidemic under consideration was characterized by the fact that the mortality and morbidity in infants were lower than in adults. For instance, in D'Espine's clinic in Geneva, there were 351

cases under 16 years of age, with a mortality of only 17 cases. In the writers' clinic at the Charité there were 167 cases of the above ages, with 47 deaths or 28.1 per cent mortality.

These statistics must be borne in mind as those of hospitals where most of the cases were grave, or even hopeless on admission. One remarks the marked immunity of the breast-fed infant, which is to be explained by antibodies in the mother's milk. While respiratory complications were noted in 108 cases, of which 49 were bronchopneumonia (29 in the course of the disease and 20 terminal), nevertheless there was a striking rarity of lobar pneumonia. Only 4 cases showed the lobar type, and here the temperature was atypically remittent or "oscillant".

W. H. DONNELLY.

CLAUSEN, S. W., AND JEANS, P. C.: **The Distribution and Excretion of Arsenic after Intravenous Administration of Arsphenamin in Children.** *The American Journal of Syphilis*, July, 1922, vi, No. 3, p. 556.

*Summary and Conclusions.*—Results are reported of arsenic determinations after intravenous administration of arsphenamin in standardized dosages in children. The rate of disappearance of arsenic from the blood, the distribution in the body and the rate of excretion are shown. Arsphenamin rapidly disappears from the blood, but 10 per cent remaining in an hour. In the blood it is present exclusively in the plasma. The organs taking up the largest amounts are the liver and the small and large intestine. The excretion begins immediately, is very rapid at first, gradually diminishing until at the end of 2 weeks only traces are found. However, at the end of 2 or even 3 weeks 50 per cent is still in store in the tissues. It is excreted 5 times as rapidly in the stools as in the urine. The curve of excretion via the urine is a peculiar one and is evidently a composite of 2 curves. It seems likely that the curve of excretion via the stools should be of the same type if the stools could be collected accurately at stated intervals. The amount of arsenic found in the cerebrospinal fluid is greater in the first hour (in some cases 2 hours) after intravenous administration. The amount of arsenic found in the cerebrospinal fluid seems to depend upon the amount of



inflammation present. In some children with no evidence of neurosyphilis no arsenic was found. The greatest amounts were found in those cases with evidence of the most active inflammation. More was found in infants with neurosyphilis than in other children similarly affected. In all patients was noted a diminishing amount of arsenic in the cerebrospinal fluid at succeeding injections and for the same time intervals. The arsenic content of the spinal fluid is at least as great in cases of cerebrospinal syphilis after intravenous administration of arsphenamin as would result from the intrathecal injection of arsphenamin serum according to the Swift-Ellis technic.

M. M. BANOWITCH.

LYON, A. B.: **Pneumonia in Children.** *American Journal Children Diseases*, January, 1922, xxiii, p. 72.

The study of 98 cases of lobar pneumonia and 52 cases of bronchopneumonia were summarized as to bacteriologic findings with 15 cases of post-pneumonic empyema. The patients were 12 years or younger.

The findings were: (1) In lobar pneumonia or empyema following *Pneumococcus*, Type I was found in 29.9 per cent; pneumococcus, Type 2 in 3 per cent, pneumococcus, Type 3 in 7.1 per cent; and pneumococcus, Type 4 in 37.7 per cent; rather higher than expected.

(2) Seems to parallel closely the findings in adult; etiology of lobar pneumonia seemingly to closely follow adult in same epidemic at a given time.

(3) Mortality indicates that child has better natural immunity versus pneumococcus, type for type than does adult.

(4) In bronchopneumonia the fixed types are less common than in lobar, common mouth forms more frequent. General mortality higher for bronchopneumonia due to conditions of origin and circumstances surrounding. *Streptococcus hemolyticus* common, as was *staphylococcus aureus* and mortality was high.

(5) Type I Pneumonia had empyema frequently, nearly 37 per cent developing. Outranks other pneumonia type empyemas 6 to 1. No relation to serum.

C. A. WEYMULLER.

BIEHLER, MDE.: **Serum Therapy in Infantile Dysentery.** *Archives de Medicine des Enfants*, September, 1922, p. 464.

This treatment was first tried by Shiga in 1898, and again by Kruse in 1902 with good results. The writer reports its use in 129 cases with only 3 deaths; in 97 of these cases the polyvalent serum was administered. The advantage of the polyvalent serum is that with its use one avoids the delay involved in typing the bacilli, necessary to pick out the specific serum indicated. Inasmuch as the earlier the serum is given, the better the prognosis, this is an important point. The serum treatment is one which is of great value, whether it be polyvalent or specific.

W. H. DONNELLY.

SIMON, S. K.: **Further Observations of *Lamblia Intestinalis* Infestation and Its Treatment.** *Southern Medical Journal*, June, 1922, xv, No. 6, p. 458.

In analyzing the clinical features of 8 cases the author found it to be evident that no one symptom or group of symptoms are to be relied upon in diagnosing *Giardia intestinalis* infection. The sole guide must rest either upon the discovery of the distinctive organisms in the stools or in the aspirated secretions from the upper intestinal tract. The organisms for the most part inhabit the duodenum and jejunum and under certain pathological conditions may find their way into the gall passages and gall-bladder. The encysted forms are found equally distributed throughout the entire intestinal tract and appear in the formed and unformed evacuations where they are subject to detection by microscopic examination. They show up as a rule in showers, but periods of weeks may elapse during which, despite careful examination, no encysted forms may be found. In all cases of indefinite diarrhea, especially where increased abdominal gas forms a prominent feature, suspicion should rest upon the presence of a *Giardia* infection, and recent experience has taught that careful search should be made in the stool for the presence of this organism.

The eradication of *Giardia* infection, when firmly entranced in the intestinal tract, has proved, in the past, a signally unsuccessful



undertaking. All kinds of so-called intestinal disinfectants have been employed without effect. Both ipecac and emetin are devoid of influence over this type of protozoa. In the two cases reported last spring trans-duodenal lavage with Jutte solution was tried; in one case the cysts promptly disappeared from the stools, but control has been lacking in determining the permanence of this effect. In the other case the results were disappointing.

Yakimoff first suggested the use of arsphenamin in the treatment of giardia infection. He employed the drug experimentally in mice. Two years later (1919) Carr and Chandler made use of this preparation in the human individual. Their results were so promising that the author used it in 6 of the cases reported. In the case of a 5 year old girl the drug was introduced directly into the intestinal tract through the duodenal tube, while in the other cases the intravenous route was selected. In each instance there was found a prompt disappearance of the cysts from the stools, and so far as can be ascertained subsequently no trace of the infection has been made out. It is of course too premature to speak of final results in these cases but they hold out promise of success unattained as yet by other therapeutic measure.

G. A. DISTLER.

MCCULLOCH, H., AND RUPE, W. A.: **The Tolerance of Children for Digitalis.** *Southern Medical Journal*, May, 1922, xv, No. 5, p. 381.

*Conclusions.*—The method of administering massive doses of digitalis to children should be the same in detail as for adults. The use of massive doses to children is entirely practical, and under proper supervision possesses no source of danger. That amount of digitalis necessary to produce clinical improvement coincides with the amount necessary to produce vomiting and a fall in heart rate. These two phenomena may be taken as criteria that an optimum therapeutic effect has been obtained. Children with heart disease require an amount of digitalis per kilo of body weight which is about 50 per cent greater than would be required for adults. There are two indications for the use of digitalis in children:

(1) Those who are suffering from heart disease and who are in a state of chronic cardiac failure.

(2) Those who have a regular rapid heart rate when that heart rate cannot be slowed by other measures.

Massive doses of digitalis are contraindicated in two groups of children with heart disease:

(1) Those who have an acute infectious or toxic myocarditis.

(2) Those who are suffering from acute cardiac failure with hearts that are overloaded.

G. A. DISTLER.

HALL, T. P.: **The Cause of Whooping Cough.** *New York Medical Journal*, August 2, 1922, cxv, No. 3, p. 158.

Whooping cough is in all cases serious and in some dangerous. The associated disturbance of the stomach is the chief source of danger. Stomach lavage in several cases was followed by great relief in each instance.

There was found in the stomach washings a white tenacious mucoid mass, which under the microscope consisted of thin walled semi-mucilaginous threads, 2 to 4 microns in diameter, each divided into cells 10 to 50 microns long, together with some round or oval spore-like bodies of the same diameter. Specimens were placed in various nutrient media and kept at ordinary room temperature. Most of them grew, slowly at first, and in 7 to 12 days developed ærial spores which were white at first but gradually assumed a blue green color due to the ripened spores. The general character of the plant, the size of the cells, the thickness of the cell walls, varied with the kind and the abundance of nutrition supplied; but in every case it was penicillium, a form of blue green mold which occurs on fruit and vegetables.

Whether the bacillus found by Koplik is the cause of whooping cough is a still open question. The treatment based upon that assumption has not proved effective. Therefore whooping cough may be due to the presence of penicillium in the stomach. The cough is characteristically a stomach cough. When the spasms are severe, relief is not obtained till vomiting occurs.

In 8 cases lavage of the stomach has cured the disease in from 3 to 6 days. The relief is immediate. After the first day's treatment the spasms lose most of their intensity, and if the treatment is begun early 3 days is sufficient to end the cough. Lavage is given



twice a day, before meals. Diet is restricted to food that is quickly digested, excluding milk, though malted milk may be given.

For lavage use 2 quarts of water, at 100° F., containing 20 minims of lysol; alternate this with water containing 3 or 4 drams of sodium bicarbonate. The distress caused by the treatment is less than is caused by a spasm of the cough; and is quite negligible after the third treatment. Turek's double stomach tube is advisable.

J. ROSE.

DESANCTIS, A. G.: **Egg Yolk in Infant Feeding.** *Archives of Pediatrics*, 1922, xxxiv.

The author believes egg yolk to be a valuable adjunct in infant feeding especially in arthreptic infants and in babies who fail to gain on sufficient food of reasonable percentage. He believes the gain due to the presence of the fat soluble B vitamin in the yolk, controlling this by having administered antiscorbutic vitamins previously without result, gain. Yolk of soft boiled egg was given as early as 3 months, beginning with one teaspoonful added to the whole days formula, gradually increasing to the yolk of a single, soft boiled egg.

C. A. WEYMULLER.

MILLS, H. B.: **Eczema.** *New York Medical Journal*, August 2, 1922, cxvi, No. 3, p. 125.

No condition of infancy gives more trouble to clear up than eczema. It may be divided into infantile eczema and seborrheic eczema, the former clearing up spontaneously toward the end of the first year, while the latter persists. Some cases of infantile eczema are the result of the postnatal continuation of the antenatal activities of the skin, which in utero provide the vernix caseosa as a protection against the surrounding amniotic fluid. In breast-fed infants the trouble is in the milk as a whole, while in bottle-fed infants it is due to one or more of the ingredients of the milk. In support of this may be mentioned Czerny's theory of fat metabolism and Finkelstein's salt theory.

Other theories are those of thyroid deficiency, external irritation, and disturbances of the nervous system. The most recent theory is

that of food anaphylaxis. The dietary treatment in the case of breast-fed babies consists of either removing or limiting the offending foods from the dietary of the mother; it has been found by Shannon that about 3 months are necessary, while a child may personally take these foods in 4 to 6 months. After a baby has been weaned it is frequently able to eat the foods that had been removed or limited in the mother's diet, and not bring back the eczema. O'Keefe found that 40 per cent were cured by the omission from the mother's diet of food to which the infant was susceptible, and that 20 per cent more were definitely benefitted. While all articles of food have been found the offenders, eggs head the list. Intercurrent disease has an unfavorable effect, particularly teething. Shannon believes some acquire sensitization before birth, but in the majority it is acquired after birth through the breast milk. Proteins biologically related or chemically similar to an offending protein, though the latter is omitted from the diet, may continue to cause the dermatosis. The condition of the gastro-intestinal tract may favor or inhibit the absorption of unaltered proteins to which the patient is sensitized and thereby either preclude the possibility of a clinical cure or help to increase the number of clinical cures. There are cases of eczema due to fat metabolism, the fat intolerance being sufficiently marked to produce pylorospasm, which is proved by the fact that improvement in the eczematous condition promptly follows the feeding of a low fat diet, such as skimmed milk, butter-milk, and melted butter, thus getting rid of the butyric acid. Where a reduction in weight occurs as a result of the elimination or the limitation of the fat, this may be overcome by increasing the carbohydrates. Sugar intolerance is also a cause in some patients, which promptly improves on its elimination or its reduction, and the same is true of protein intolerance, which is largely benefitted by boiling the milk. Occasionally, where milk has to be eliminated entirely for a limited period, simple sugar dilutions or cereal decoctions may be employed temporarily with marked benefit.

J. ROSE.

KAISER, A. D.: **Hemorrhagic Disease of the Newborn.** *New York Medical Journal*, August 2, 1922, cxv, No. 3, p. 156.

Hemorrhagic disease of the newborn occurs in one out of every 100 births. Intracranial hemorrhage is frequently a local manifesta-



tion of a general condition and is not necessarily associated with trauma during parturition. Hemorrhagic disease occurs in an easy labor as often as in a difficult one. Injections of blood-serum or prothrombin given early materially improve the chance for recovery. The early use of spinal puncture with a hypodermic injection of serum in the suspected case of intracranial hemorrhage is advocated.

J. ROSE.

LUTTINGER P.: *Bees' Honey in Substitute Infant Feeding.* *New York Medical Journal*, August 2, 1922, cxv, No. 3, p. 153.

Bees' honey is a widely distributed food and has been used as a medicine from time immemorial. Ripe honey is a yellowish, syrupy liquid with a characteristic odor and aromatic taste, followed by a slight prickling of the tongue. Its consistency, color and flavor varies with age, place of production and the flowers from which it is collected. Honey is acid, turns the polarized light to the left and dissolves readily in cold water; less so in alcohol.

The chemical composition of honey varies exceedingly. The water content differs according to the amount of rainfall in the locality of its production and the amount of moisture present where it is stored. Thirty-two honeys analyzed within the last 5 years show the following average composition:

*Per Cent driven off at 100° C.*

Levulose .....	39.10
Dextrose .....	34.00
Water .....	17.20

*Per Cent Phosphoric Acid, Calcium, Magnesium, Iron,  
Traces of Iodin, etc.*

Proteins .....	1.80
Formic acid .....	1.10
Wax .....	.30
Mineral salts .....	.75

*Per Cent Resins, Gums, Bee Glue (Propolis), Coloring  
Matter, Volatile Oils, Vitamins, etc.*

Dextrin .....	.45
Sucrose .....	.40
Malic acid .....	.30
Acetic acid .....	.20
Undetermined .....	3.80

Total .....	100.00
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The average specific gravity is 1.46 at 15° C.; one tablespoonful weighs a trifle over an ounce and yields about a 100 calories. Although its caloric value is about equal to that of sugar, honey is far superior in many respects. Thus, sugar is 100 per cent sucrose, a disaccharide which is not absorbed directly; but has to be inverted into dextrose and levulose before it can enter the blood. In honey, the inversion takes place in the crop of the bee.

Honey is thus indicated in any condition where the assimilation of starch or the disaccharides is delayed and where prompt absorption of energy is desired, as in constitutional inability to digest starch or other polysaccharides, due to lack or diminution of the respective enzymes.

The largest part of honey sugar is fructose (levulose), a levrorotatory monosaccharide which has an affinity for the body cells; thus it is rarely found in the urine of diabetic patients. It is more rapidly absorbed than lactose and it has not the disadvantage of undergoing butyric acid fermentation like maltose; hence does not produce acidosis. Its rapid absorption prevents it from undergoing alcoholic fermentation and infants fed on honey rarely show signs of flatulence.

Carbohydrates favor the absorption of fat, by yielding acids which neutralize the intestinal alkalinity and thus allow the fatty acids to be absorbed as such, instead of forming soapsuds. Honey favors this process by the free acids it contains.

Another advantage is its protein content, derived from the pollen of plants. It not only adds to its nutritive value; but in cases where the infant cannot digest casein or other milk protein, it may become the only available source of nitrogenous food during a critical period.

The organic acids act as mild stimulants to the digestion and the increase of appetite seen in children fed on honey may be largely ascribed to this factor and possibly to the volatile oils.

The undetermined substances together with the wax tend to increase peristalsis. Fresh honey has a decided laxative action which it loses upon boiling. It has a pronounced soothing effect upon infants.

Wherever there is an indication for sugar, lactose or maltose, honey is substituted, in the proportion of one teaspoonful of honey to an 8 ounce bottle of the feeding mixture. Honey is also valuable in marasmus, rickets, scurvy, malnutrition, and other conditions, in



which formerly the various sugars, cod-liver oil or patent foods were used.

J. ROSE.

BEHREND, M.: **Acute Abdominal Conditions in Children.** *New York Medical Journal*, August 2, 1922, cxv, No. 3, p. 132.

The best single differentiating sign between appendicitis and pneumonia is the playing of the alæ of the nose. This sign is rarely found in the early stages of appendicitis, while it is always present in pneumonia before even a demonstrable lesion is found in the lungs. A case is described where 6 weeks before the abdominal condition presented itself there was a history of pharyngeal diphtheria. The patient was a female, 5 years old. An abdominal condition was present, but on account of the generalized tenderness, with a little more rigidity in the right iliac fossa than in other parts, a definite diagnosis was difficult. While appendicitis was the most frequent of all acute abdominal conditions, still on account of the history of diphtheria, a diagnosis of diphtheritic or pneumococcic peritonitis was made with a possibility of appendicitis.

Most surgeons wait until the pus has become localized before operating. If the pus should show a tendency to localize they will recover, but if there is no tendency to localization, then the waiting policy does no good. The mortality in such cases is exceedingly high. If they could be seen early enough prompt surgical intervention would give the best results. The patient was operated upon about 20 hours after the onset of the abdominal symptoms. Upon opening the abdomen a large volume of pus exuded, most of which was in the pelvis; the appendix seemed normal, but was removed. A large sized tube was inserted in the pelvis, the patient placed in the Fowler position and received salt solution by bowel. Another patient was admitted with a diagnosis of meningitis, but on account of the preponderance of abdominal symptoms, a diagnosis of pneumococcic peritonitis was made. He was very sick, toxic, emaciated, with dry coated tongue, eyes sunken, sordes around the corners of the mouth. The abdomen was rigid throughout, tender and slightly distended. There were no physical signs of meningitis at the time this examination was made. At operation, the abdomen presented the character-

istics of a late generalized peritonitis, the intestines being matted together. The pus was localized in the pelvis; the appendix was apparently not the cause of the infection. Slides made from the pus revealed a mixed infection of streptococcus and pneumococcus with a preponderance of the former. The patient, 5 years old, died within a week, notwithstanding supportive measures, hypodermoclysis, stimulants, and antistreptococcic serum. Immediately after death the tonsils were excised, the pus was cultured and revealed streptococci.

A boy, 10 years old, had some abdominal pain with a little tenderness in the right iliac fossa, which was well marked on rectal examination. At the time of our examination, there was no rigidity or tenderness, pain was absent, the patient being in absolute repose. Operation was not advised. The following day a diffuse urticaria developed.

When fat or robust children are seized with sudden pain in the right iliac fossa followed by the cardinal symptoms of vomiting and rigidity, the appendicitis is usually of the fulminating type. In one case, the patient, a female, 12 years old, had complained of pain on the right side in the early morning hours, followed by the characteristic symptoms. On examination, there was still some rigidity with subsidence of symptoms. Operation was advised. A somewhat swollen appendix was found, with numerous seat worms scattered over its mucous membrane, the surface of which was covered with petechial hemorrhages.

If persistent rigidity in the right iliac fossa alone is found, it is sufficient cause for operation in the absence of all other phenomena.

The most perplexing acute abdominal condition is the presence of gall-stone colic in children. The most important point is the seat of the pain and the presence of rigidity higher up on the abdominal wall under the costal border.

J. ROSE.

BASSLER, A.: **Chronic Abdominal Conditions Encountered in Adults and Children.** *New York Medical Journal*, August 2, 1922, cxv, No. 3, p. 126.

Ptosis cases in adults suggest that symptoms of the condition were present in the child in many of them. There are many normal



individuals with organs lower than average without symptoms. A close observation of infants and children has proved that the elements of splanchnoptosis are common in the young, and the modes of life, methods of feeding, illnesses of infancy and childhood, etc., are conditions causing the continuation or its liability as extra factors. Primarily, splanchnoptosis is a status of debility or chronic neurosis represented in a chronic devitality of the sympathetic system. Children born of poorly nourished parents, or where tuberculosis, syphilis, alcoholism, or chronic disease is present, have most offspring of the poorest quality. Then come conditions as improper feeding, unhygienic conditions, rachitis, with its damaging effects on the nervous, muscular, osseous and ligamentous tissues, more or less mild and unrecognized states of scurvy and the infectious diseases of childhood; also school with close confinement and too little out-door play and recreation, followed by the grind in college, shop or factories, then the wearing incidents in business, homes, and in women the bearing of children and dangers of postpuerperal relaxations of the abdominal cavities.

The condition diagnosed in the child will mean fewer cases in the adult, and by proper feeding, abdominal support, massage, conservation of physical energy and the building up of vital strength, it will mean a marked benefit for health twenty years from now. The pediatricist has the best period of life in which to accomplish permanent results, for his work is done during the period of growth in skeleton and soft tissue makeup in the child, when these are more plastic and respond quicker in benefits.

Pylorospasm is common in the adult. Often it is symptomatic and reflexly by pathological conditions elsewhere, as in chronic disease of the appendix or minor pathologies like bands and kinks in that vicinity. Pylorospasm results also from spastic conditions of the colon (spastic constipation), this being a concomitant condition associated with chronic intestinal toxemia of anerobic infections, especially those due to the *Bacillus welchii*, the Gram positive cocci and the *Bacillus putrificus*. Vagotonia is a resulting state from these infections, and never the etiological cause of the spasticity. With this condition a spastic sphincter ani often exists, without local disease in the rectum—pylorospasm without definite cause. These have been designated as neurotic, although they are due to irritative effects on the stomach from dietetic errors.

Idiopathic pylorospasm can occur in childhood and continue into adult life.

A very important condition is the chronic toxemias in the intestines in childhood. Twenty-one per cent of several thousand histories in adults show these to have originated in the first decade of life. Any enterocolonic condition that lasts for a week or more may be assumed as its origin.

The child can harbor all the parasites that infect the adult.

There are many cases of incomplete rotation of the colon. Marked instances of more or less left sidedness of the right colon have been known. But more numerous than these are the just short of complete rotation where the caput cecum, ileocecal valve, and all of the ascending colon occupies its proper anatomical position, but the hepatic flexure is not fixed in proper position posteriorly, is freely movable, and tends to a left sided position. This no doubt exists in children because they are prenatal in timing, and some cases give a symptomatology that dates early in life.

The majority of megacolon cases in the adult were present in childhood. Most of these, do not give an early symptomatology and often it is stumbled upon in an x-ray examination.

There is no doubt that loops of the colon and redundancy of the sigmoid in adult life existed in childhood. Most of them are improved sufficiently well in medical ways.

The symptoms that should awaken investigation in the young are as follows: paroxysmal pain in the abdomen, mostly in the epigastric region; obstinate constipation or tendency to loose movements of the bowels; intermittent or more or less constant distention of the abdomen (pot belly); recurrent vomiting; steady anorexia; acidosis attacks; anemia; malnutrition and irritable disposition.

J. ROSE.

REGAN, AND CHENEY: **The Value of the Routine Use of the Colloidal Gold Reaction in Acute Epidemic Poliomyelitis.** *American Journal Children Diseases*, February, 1922, xxiii, p. 107.

The examination of 74 fluids of 21 acute poliomyelitis cases, chiefly of the myelitic type from 4th to 23rd day of disease was carried out and curves plotted. The authors conclude: (1) That the



reaction is always found in the acute stage and is constantly in the syphilitic zone, the first and second weeks gradually rising, and subsidence averaging at 8th to 10th week; rarely before fourth week, but may persist for years. Seems to measure duration of acute stage but not prognostic as to gravity.

(2) Maintained high curves found frequently when associated with paralyses.

(3) No relation to other cytologic or chemical spinal fluid findings found.

(4) The differential diagnosis was from syphilis, chiefly by history; from tuberculous meningitis because the zone differs; from epidemic encephalitis because epidemic encephalitis has a very variable colloidal gold curve; and from meningismus because it has no colloidal gold curve.

The authors conclude that this is the most valuable of laboratory procedures in the diagnosis of epidemic poliomyelitis.

C. A. WEYMULLER.

SECTION ON  
ROENTGENOLOGY AND ELECTRO-  
THERAPEUTICS

COBB, S.: **Electromyographic Studies of Paralysis Agitans.** *Archives of Neurology and Psychiatry*, September 1922, viii, No. 3, p. 247.

For these electromyographic studies, a string galvanometer and a recording camera such as are used for electrocardiographic work were employed. One of the electrodes was applied to the skin over the belly of the muscle to be studied, and the other was placed over some nearby skin area beneath which there was no muscular contraction. In studying the tremor of paralysis agitans, the muscle usually recorded was the flexor carpi radialis because of its frequent involvement in the tremor and its convenient location for the application of electrodes. One of these was placed directly over the belly of this muscle, and the other (the "indifferent" electrode) was applied to either the flexor surface of the wrist or the outer surface of the lower arm.

By this method 18 cases showing the Parkinsonian tremor were studied. An analysis of the electromyograms permits of the following conclusions:

(1) The tremor of paralysis agitans gives a characteristic electromyogram, with large, slow waves at the time of muscular contraction, and smaller, more frequent waves between these tremor contractions.

(2) The rate of the tremor of paralysis agitans is remarkably constant, the average being 5.8 per second. Little variation is observed in any one case when examined months later.

(3) In children the rate of the tremor may be much more rapid (9 per second).

(4) Scopolamin may stop the tremor, but does not seem to slow the rate when acting less completely.

(5) Various muscles in the same person show practically the same rate of tremor.

F. DAMRAU.



HOLLAND, A. L.: **Fluoroscopy in Diseases of the Abdominal Organs.**  
*New York Medical Journal*, June 7, 1922, cxv, No. 11, p. 659.

In the hands of the internist the fluoroscope becomes an instrument to be used as his stethoscope, ophthalmoscope or other instrument, as an adjunct to the other clinical methods.

The patient should not prepare in any manner except to refrain from eating breakfast the morning of the first examination. A cup of clear tea or black coffee one or two hours before the exposure is allowable. No castor oil, salts, or other cathartics are to be taken.

Many failures are caused by insufficient preparation of the observer's eyes. Ten minutes in the dark or dimly lighted room are necessary to relax the accommodation.

The patient is placed in the anteroposterior position. The heart, arch and lungs quickly scanned for gross irregularities. Deep breathing will show up any inequality in the excursions of the right and left diaphragm. The patient is next placed in the right anterior, three quarters oblique position. Holding the glass of barium mixture in his left hand he is told to swallow the meal rapidly. Observations on the esophagus are thus possible.

Any lesion in the esophagus that is capable of causing symptoms is accompanied by some dilatation above the site of the lesion. When the lesion itself is not sufficient to obstruct, the local spasm which accompanies it is the direct cause of the dilatation. Very slight irritation at any point will cause spasm in that zone. When any defect or dilatation is discovered in the esophagus a plate or two should be taken to confirm.

It is possible to go over the posterior and anterior borders, as well as both curvatures of the stomach, in a search for niche, filling defects, incisura or other abnormalities. The character of the peristalsis, the size of the stomach, its tone and position, or the presence and location of spasm are easily diagnosed. The clinician armed with complete clerical and laboratory data should make the observations.

In disease of the duodenum the fluoroscope is an instrument of precision in negative as well as positive diagnosis. The manipulation here is most difficult, but nearly 100 per cent of cases of duodenal disease can be diagnosed fluoroscopically independent of all other

findings. Induration and local spasm largely cause the filling defects that make duodenal or postpyloric ulcer evident fluoroscopically. It requires a little experience and deductive reasoning to differentiate these defects from those caused by adhesions, bands or pressure from without the canal. Malignancy, except by extension is rare here.

The second and third portions of the duodenum are important to observe, as stasis takes place because of kinking or bands. It requires considerable manipulation and maneuvering to bring out the shadows peculiar to such changes.

The position or the tone of the small intestine beyond the duodenum cannot be studied satisfactorily by means of the fluoroscope except where adhesions or growths cause partial or complete obstruction. The barium passes so rapidly through the small intestine that it is difficult to make observations on it unless there is stasis at some point.

The experienced fluoroscopist estimates the motor function by noting the character of the peristalsis, the tone, size and position of the stomach and the ease with which he is able to express stomach contents into the duodenum. The three hour interval gives the most information. One can calculate approximately the amount of residue, and at this time if there is a residue it can be utilized again to fill out the pars pylorica and the cap to confirm any defects that might have been suspected but not proved at the first examination.

Over 90 per cent of normal stomachs are empty 3 hours after a barium meal, so that the minor degrees of stasis may be demonstrated, while 6 hours after only the more serious errors of motility are discoverable. Twenty-four hours after, the colon normally should be filled and defects of any kind, malpositions and irregularities in tone demonstrable. But the barium enema is more satisfactory.

A large percentage of patients thought to be constipated really show an increased motility, and inversely, many with loose and frequent bowel movements are possessed of a slow motor mechanism.

An appendix that retains barium does not necessarily mean an organic change beyond a lack of tone. But one that retains a fixed position, or is kinked up and remains in this shape is found to be diseased.

The gastro-intestinal canal is peculiar in its tendency to spasm, not only of its many valves but in between these as well. The rela-



tive independence of its motor mechanism to systemic control is responsible for this. In health this autonomic system works well, but in disease it seems to run amuck. Hence the puzzling symptoms with which the internist must reckon in gastro-intestinal diagnosis. By means of the fluoroscope one can watch this erratic behavior and utilize some of the manifestations in diagnosis. For instance, if one sees a stomach that is not unduly large in which the peristaltic activity all the way from the cardia to the pylorus is excessive and deep, and can demonstrate that there is no obstruction at the pylorus or in the duodenum and that motility is increased, one thinks of gall-bladder disease. This syndrome has been proved peculiar to gall-bladder irritation in a large percentage of cases, and again acting through the ileopyloric reflex, disease in the lower right quadrant causes spasm of the pylorus and antrum.

Out of 100 consecutive cases there is a record of 90 per cent correct diagnoses with 10 per cent failures or doubtful results.

J. ROSE.

WHITCHER, B. R.: **Blood Changes in Myelogenous Leukemia Following Radium Treatment.** *The Boston Medical and Surgical Journal*, September 7, 1922, clxxvii, No. 10, p. 349.

The patient reported seemed to be greatly benefited for the time by the radium treatment, but its effects were temporary and when the patient discontinued treatment for two months he suffered a relapse. His subsequent condition showed the need of using the utmost caution in giving radium treatment, especially after a relapse. While an apparent improvement in the blood-picture did follow the first treatment with radium after the patient's return, the most striking phenomenon after the second treatment was the rapid fall in polynuclear leukocytes, the blood-picture coming to resemble that of lymphatic leukemia, and the rapid leukopenia and anemia which followed, resulting in the patient's death.

The observations in this case show, on the one hand, that the application of radium in myelogenous leukemia does produce an apparently beneficial effect on the patient, if the amount of radium applied is regulated with caution, as the leukocyte count is reduced to nearly its normal level, the myelocytes are greatly decreased, and

at times made to disappear altogether, the blood is brought to a more nearly normal appearance, and an apparent general improvement takes place in the patient's clinical condition. On the other hand the study of this case indicates that radium is a factor fraught with danger, and that caution is needed in regulating the amount to be applied, lest an excessive amount of radium or too frequent application may cause undue destruction of the leukocytes and so injure the reproductive powers of the bone marrow that a rapid leukopenia and anemia result.

The author deems the best procedure to apply the radium over the enlarged spleen only, and the lymph nodes, if enlarged, but to let the bone marrow alone until the myelocytes have entirely disappeared from the blood. There appears to be danger that, in treating the bone marrow at the same time, its power to produce new red cells may be weakened so that the red cells and hemoglobin decrease along with the leukocytes.

M. M. BANOWITCH.

LEWIS, T.: Interpretations of the Initial Phases of the Electrocardiogram with Special Reference to the Theory of "Limited Potential Difference". *Archives of Internal Medicine*, September, 1922, xxx, No. 3, p. 269.

The deflections of the string in electrocardiography have been attributed to currents of action set up in the contracting muscle of the heart. The explanation most commonly accepted supposes the bulk of the contracting muscle to be electrically negative to the bulk of the resting muscle, the resulting current being responsible for the deflection of the string. This theory Lewis speaks of as the hypothesis of "distributed potential differences". He presents some examples designed to show that this hypothesis is untenable. It seems more likely to him that the part of the muscle which is becoming active should be considered relatively negative to the inactive muscle in union with it and in its immediate vicinity, the deflection of the galvanometer being the expression of the sum of the currents being generated as the contraction wave passes over the heart. This theory he calls the hypothesis of "limited potential differences". This would somewhat modify our conception of the meaning of the typical



electrocardiographic curve. For instance, the *S* wave would not signify a preponderance of action of the tissues about the apex as compared to the base. It would mean that at that particular phase of ventricular contraction the preponderating movement of impulse to contract was upward rather than downward. This is the case, as throughout the ventricle the impulse moves from the endocardial to the epicardial surfaces almost simultaneously but reaches the epicardium a little sooner at the apex than at the base. During the first part of this movement the preponderance of impulse is downward. During the latter part, the wave has completed its journey at the apex but is still penetrating the ventricular wall in an upward direction in some of the basal tissue.

T. HOWARD.

McALPIN, K. R., AND VONGLAHN, W. C.: A Case of Hodgkin's Disease Treated with Roentgen Rays for Six Years. *Archives of Internal Medicine*, September, 1922, xxx, No. 3, p. 286.

The patient described was a woman of 22 who first appeared complaining of general asthenia and abdominal pain. A mass in the abdomen led to a laparotomy which disclosed a number of enlarged lymphatic glands. Histologically these proved to be the glands of Hodgkin's disease. The patient was followed for six and a half years. She developed adenopathy in the more accessible regions and had periods of recurrent fever. Her blood showed quite a marked increase of large mononuclears and transitionals. She was treated intermittently with x-rays, receiving in all 95 treatments, which apparently did a good deal toward slowing down the process and prolonging her life. She had periods of marked anemia, particularly toward the end. She was transfused nine times, with apparent benefit. She developed an effusion in the pleural cavity, rather a rare manifestation of Hodgkin's disease, and had to be tapped a number of times. She finally developed a fulminating peritonitis, which was found at autopsy to be due to perforation of the transverse colon. Other organs involved included the spleen, liver, lungs, pleura, intestine and peritoneum.

T. HOWARD.

## SECTION ON NEUROLOGY AND PSYCHIATRY

VINCENT, S.: **Critical Examination of Current Views on Internal Secretion.** *Lancet*, August 12, 1922, cciii, No. 5163, p. 313.

It has been suggested that the secret of health and happiness depends upon a harmonious function of the glands of internal secretion. Berthold of Gottingen in 1849 gave the first experimental demonstration of internal secretion. He removed the testicles of young cockerels and transplanted them to the surface of the intestines. These animals remained normal in every respect as compared to castrated cockerels without transplantation. Claude-Bernard and Brown-Sequard were the founders of the modern doctrines of internal secretions. The former stated that the spleen, thyroid, suprarenals and lymphatic glands furnished an internal secretion. Brown-Sequard attributed this function to all the tissues of the body.

In 1905 Starling coined the word "hormone" which means to excite and was used synonymously with internal secretion. In 1911 Gley suggested the term harmozone (regulator). Schæfer in 1915 pointed out that some of the internal secretions acted as inhibitors. He therefore suggested that the term hormone be applied to excitant secretions and coined the word "chalone" (to make slack or relax) for the inhibitory secretions. The term antacoid substance includes hormones and chalones. The author then discusses the various internal secretions.

*Adrenal Bodies.*—Little is known about the cortex, except that it is essential to life and has some relation to the sexual functions. The



medulla of the organ is not essential to life. Tying off the vessels from the adrenals produced no effect on the blood-pressure. The author does not believe in the so-called tonic-theory of the adrenals as held by clinicians. Hoskins has found that adrenin produces vaso-dilatation in the muscles and vaso-constriction in the cutaneous vessels. Vagotonia and sympathicotonia are then discussed. The author is of the opinion that there is no foundation for these terms.

*Thyroid Gland.*—Thyroxin, isolated by Kendall is an example of an internal secretion. It increases the rate at which fundamental reactions are carried out.

*Pituitary Gland.*—The author makes the startling statement that no definite deductions can be drawn from disorders of the pituitary gland. He thinks that the symptoms are probably due to some irritation at the base of the brain. He does not think that to the parathyroid bodies can be ascribed tetanic disorders. The author concludes that the only secretions which have any physiological action are the adrenals, thyroid and pituitary.

H. JOACHIM.

**SCHWAB, S. I.: Diagnostic Value of Blood Sugar Curves In Neurology.**

*Archives of Neurology and Psychiatry*, October, 1922, viii, No. 4, p. 401.

One hundred and fifty routine neuropsychiatric cases were studied in reference to their sugar tolerance curves. From these were excluded those in which the sugar values might be influenced by other than neurologic factors. Thirty-eight patients were frankly psychotic. The blood sugar determinations were made after 12 hours of fasting, and 1, 2, and 3 hours respectively after a standardized glucose meal.

In the group of the psychoses 20 out of 38 cases showed distinctly abnormal curves. These were shown by two things, an initial rise far beyond the normal and a sustained rise beyond the second hour and often no return to the normal level. It is significant that the type of curve had absolutely no relation to the clinical picture presented; that is, there was no curve which might be said to represent, for example dementia precox, or manic depression, or any other condition. The patients who presented clinically a dull, apathetic, anxious, or depressed state seemed to show on the whole the most definite sugar value deviations. No diagnostic value other than this could be obtained.

From 25 neurotic patients only 6 abnormal curves were obtained, 2 of which could be excluded because of complicating factors and 2 more of which could be attributed to a pronounced anxiety state. Excepting where there were marked mental symptoms the remaining cases of organic nervous disease showed nothing which could in any way be connected with the particular disease in question.

F. DAMRAU.

MEYERS, I. L.: **Magnus and De Kleijn Phenomena in Brain Lesions of Man. A Consideration of These and Other Forced Attitudes in the So-called Decerebrate Man.** *Archives of Neurology and Psychiatry*, October, 1922, viii, No. 4, p. 383.

The phenomena of Magnus and De Kleijn occur in the animal after ablation of both hemispheres of the cerebrum and in man when disease of the cerebrum is of such extent as to eliminate more or less completely its influence on the periphery. In this state the limbs, always the anterior, less constantly the posterior, change posture as a result of passive displacement of the head. These reactions have been shown by Magnus and De Kleijn to originate in stimuli which arise in the muscles and articular structures of the upper four cervical joints. Of these, the type of reaction brought about by rotation of the head is generally the most pronounced. Another type of reaction, called by these observers labyrinthine reflexes, is brought about by displacements of the head which change its position in space without altering its position with relation to the body. These reactions, they have shown, originate in labyrinthine impulses.

Magnus and De Kleijn originally observed these cervical and labyrinthine phenomena in the decerebrate animal. They concluded that the same phenomena should be observed, perhaps less fully developed, in man when destruction of the cerebrum is of such extent as to obliterate all its functions. This prediction was verified. They reported 7 patients, each exhibiting the cervical reactions and 2 of them the labyrinthine reactions as well. In all of these cases (two necropsies) the cerebral functions were more or less completely abolished, but probably not to the extent attained in the decerebrate animal.



Two cases exhibiting these reactions are reported with the necropsy findings. The first patient, a girl aged 14, had never sat up or attempted to walk or articulate. Her attitude was one of opisthotonus and all of the limbs were in spastic paralysis. The patient exhibited both types of the cervical reactions of Magnus and De Kleijn; that is the type which affects the limbs on the two sides symmetrically and the type which affects them asymmetrically. Postmortem examination revealed a small cerebrum and a normal-sized cerebellum. The total water displacement by all the intracranial structures was 470 c. c., by the cerebellum alone 65 c. c. The cerebrum was markedly atrophic in the region of the motor cortex on both sides. The lenticular nuclei likewise showed severe degeneration.

Magnus and De Kleijn interpreted the cervical reaction of the decerebrate animal as components of certain normal attitudes, attitudes which are inaugurated by movements of the head but which affect the entire body. Thus, when a normal cat drinks milk from a cup on the floor, in lowering her head, she flexes the fore-limbs and extends the hind-limbs to facilitate the approach of her head to the cup. She makes just the reverse movements with the limbs when she elevates the head to seize a piece of meat above her. An animal extends the limbs on the side toward which the face is directed when gazing around to one side or the other. In the decerebrate animal, according to this view, the limbs assume postures in response to passive displacements of the head corresponding to their movements caused by active or voluntary displacement in the normal animal. The conclusion is that these phenomena occur only in the presence of exalted spinal automatism, which is produced only by a very severe cerebral lesion, a lesion involving the lenticular zone and especially the phylogenetically older part of it, the paleostriatum.

F. DAMRAU.

PARDEE, H. L.: **Observations on the Diagnosis of Neurosyphilis.**  
*New York Medical Journal*, May 3, 1922, cxv, No. 9, p. 507.

The examination of the spinal fluid reveals things of importance in the diagnosis of neurosyphilis. An increased globulin indicates inflammation within the subarachnoid space; a positive Wassermann indicates the presence of syphilis, and is absolutely diagnostic. Cases of general paresis usually have a very strong reaction.

In the cell count and colloidal gold curves we have aids in differentiating the numerous types of neurosyphilis. The number of cells is a rough estimate of the amount of meningeal involvement; those with low cell counts show a maximum amount of parenchymatous nervous tissue destruction, such as the long-standing cases of tabes with little pain but much ataxia, the spastic paraplegias, and also paresis, while those with cell counts above 50 or 75 are the meningeal types, such as basilar meningitis, gummata, tabes with pain, etc. In these latter types treatment is of maximum benefit.

The colloidal gold reaction is obtained in other inflammatory diseases of the central nervous system, also. A curve which rises higher than two is pathological and indicates inflammatory products in the fluid of a lipid or protein nature. Curves of the stepladder or so-called paretic types with complete decoloration in the first few tubes are found in poliomyelitis, epidemic encephalitis, and disseminated sclerosis. In neurosyphilis a paretic curve is always suggestive, but not always diagnostic. Decoloration of the tubes in the midzone of the curve, the so-called tabetic or luetic curve, is even less diagnostic of tabes, for any type of neurosyphilis is apt to give this, and any infectious or toxic condition involving the central nervous system is likely to produce a rise in the curve of the midzone.

Examination of the central nervous system is very important. The syphilitic eye is, barring epidemic encephalitis, pathognomonic of the disease. A paralysis or loss of function of any of the cranial nerves is a common occurrence. Alteration in the reflexes, and the presence of typical or shooting, indefinite rheumatic or neuritic pains in the legs may be present. Bladder symptoms are often one of the early signs of spinal cord involvement. The occurrence of mental episodes and convulsions in paresis, of vascular crises, etc., all point to a luetic neuraxial disease.

Neurosyphilis is very frequent and spinal puncture is valuable as an aid for diagnosis, and for guiding one's treatment.

J. ROSE.

GLOBUS, J. H., AND STRAUSS, I.: **Progressive Funicular Myelopathy (Subacute Combined Degeneration).** *Archives of Neurology and Psychiatry*, October, 1922, viii, No. 4, p. 366.

Two cases of pernicious anemia showing clinical evidence of combined sclerosis were studied, and after death a minute histologic ex-



amination of the nervous system, particularly the spinal cord, was made. The lesions did not give the appearance of a true system degeneration but rather of irregularly distributed, coalescent foci. In studying the diseased areas in the spinal cord, two grades of process were found. There were lesions which showed active destructive or regressive process and other areas, irregular in distribution, giving evidence of a more or less chronic, productive reaction. In the acute lesions the extent of the process of dissolution was impressive, large zones of white matter being replaced by products of softening and by phagocytes. In the chronic foci there was progressive healing by formation of glia fibers.

The material showed conclusively and uniformly that the myelin sheath was the seat of the most intense disease process. In areas in which the softening process was most acute, the myelin cover of nerve fibers almost completely disappeared. The resultant products of destruction were picked up by phagocytic elements which were mainly glial in origin. The axis cylinders showed changes proportional to the modifications noted in the myelin sheaths. They had apparently been involved in the process secondarily to, or in some instances coincidently with, the destruction of the myelin sheath. This view is based on the fact that in many scars devoid of myelin coat and normal nerve fibers there were naked axis cylinders, fairly uniform in outline, uninterrupted in their course and showing practically no pathologic changes. Striking histologic changes were offered by the reactions of the various types of glia elements in both acute and chronic areas of degeneration. Naked axis cylinders were frequently found in these areas of gliosis. There was almost a total lack of reaction on the part of the mesodermal components.

The pathologic process is of such a nature that we may predicate the action of a toxin of unknown origin. It is probable that this agent is responsible not only for the changes in the spinal cord and brain, but also for the clinical and pathologic manifestations of pernicious anemia. It seems probable that the degenerative changes in the central nervous system and the changes in the rest of the organism are the joint result of a common factor, rather than related to each other as cause and effect. Furthermore, the histologic picture in this disease is, in the main, similar to that found in multiple sclerosis. In both conditions there is probably an endogenous toxin

which has a selective affinity for the myelin. The dissolution of the myelin leads to the exposure of the axis cylinders, which undergo degenerative changes, and are eventually destroyed. This progressive destruction of the parenchyma calls forth a large number of phagocytic elements of glial origin. Side by side with this there occurs a progressive activity of fiber-forming glia cells. The name "progressive funicular myelopathy" is proposed to indicate the character as well as the topographical relationship of the lesions.

F. DAMRAU.

SCARLETT, H. W., AND INGHAM, S. D.: **Visual Defects Caused by Occipital Lobe Lesions. Report of Thirteen Cases.** *Archives of Neurology and Psychiatry*, September, 1922, viii, No. 3, p. 225.

The patients forming the basis of this report were soldiers under observation in U. S. Army Hospital No. 11 at Cape May, N. J., in 1919. Each individual had received a wound of the head which involved one or both occipital lobes. While none of the patients of this series came to necropsy and it was impossible to determine with accuracy the extent of the brain injuries, it appeared of interest to observe the correlation of the visual defects and the brain lesions. In charting the fields a self-registering perimeter was used. The object was 5 mm. square; and the patient was 1 meter from an improvised Bjerrum screen.

As a result of these studies, the authors were enabled to formulate the following conclusions:

(1) Unilateral, occipital lesions commonly result in homonymous hemianopsia, the blind field of each eye being limited by an approximately vertical line passing close to the fixation point. They do not result in a loss of fixation nor a reduction of acuity of central vision of either eye.

(2) Central vision is represented in the apices of the occipital lobes.

(3) Unilateral lesions at a distance from the occipital pole may result in approximately symmetrical paracentral scotomata.

(4) Visual defects caused by lesions of the occipital lobes are approximately symmetrical but not exactly superimposable.



(5) The macula is a central area of high visual acuity, not sharply circumscribed, extending a short distance in all directions from the fixation point, which probably represents less than 1 degree in the arc of the visual field.

F. DAMRAU.

SOLOMON, H. C., AND TAFT, A. E.: Effects of Antisymphilitic Therapy as Indicated by the Histologic Study of the Cerebral Cortex in Cases of General Paresis. *Archives of Neurology and Psychiatry*, October, 1922, viii, No. 4, p. 418.

Particular study was made of the comparative degree of perivascular plasma cell infiltration. Plasma cells diffusely present in the perivascular spaces and pial infiltration are the critical pathologic findings in general paresis. It was found that plasma cells were few and infrequent in most of the treated patients, especially in comparison with the untreated ones. This was so striking that in many cases it was possible to predict from the histologic picture whether or not the patient had received treatment. The lymphocytic perivascular infiltration was also much less, on the whole, in-treated than in untreated patients. The pial infiltration was likewise strikingly less in the treated group. Inasmuch as the plasma cell is so essential a part of the histologic picture of paresis, its apparent numerical reduction in the treated cases is probably an evidence of lessened chronicity of the paretic process.

Several points of general clinical interest were brought out by this study. It would seem that the cell count of the spinal fluid taken during life does not give a satisfactory indication of the extent of the cerebral meningitis. Several patients whose brains exhibited marked pial infiltration had during life cell counts of 10 per cubic millimeter or less. The colloidal gold reaction may become negative as a result of treatment. In cases clinically labelled paresis a paretic curve present at the outset of treatment became normal, and the diagnosis was subsequently confirmed at necropsy. Likewise, the Wassermann was observed to become negative under treatment.

The inference drawn from those cases in which the patient had received intraventricular injections of arsphenamized serum is that

no damage is done by this procedure. Histologically the ventricular surfaces and the choroid plexus showed no evidences of trauma. On the other hand, there was no evidence that any good was accomplished in this way.

F. DAMRAU.

WOLTMAN, H. W.: **Malignant Tumors of the Nasopharynx With Involvement of the Nervous System.** *Archives of Neurology and Psychiatry*, October, 1922, viii, No. 4, p. 412.

Out of a series of 79 cases of malignant tumor of the nasopharynx seen at the Mayo Clinic, 25 cases showing involvement of the nervous system were selected and analyzed. Early diagnosis was difficult because of the common incidence of early extra-nasopharyngeal symptoms. In 16 of 25 cases there were no nasopharyngeal symptoms. Among early complaints and signs were pain in the face or side of the head, headache, deafness, tinnitus, diplopia, blindness, proptosis, paresthesia of the face, cervical adenopathy, dysphagia, aphonia, hoarseness, and malignancy in distant parts of the body.

The abducens was the cranial nerve most often affected (18 of the 25 cases), the third and fourth less often. There was objective sensory disturbance in the domain of the fifth nerve in 11 cases, the motor branch being involved in 6. As a rule, several cranial nerves were affected simultaneously, particularly those entering the orbital cavity. Next in frequency was a combination of these with the trigeminal. All combinations of cranial nerve palsy seem possible.

Malignant tumors of the nasopharynx are more common than is generally believed. They usually take origin in the fossa of Rosenmüller. In all unexplained cases of cranial nerve palsy, in suspected tumors of the gasserian ganglion, in paralysis of groups of cranial nerves constituting the various classical syndromes, such as the jugular foramen syndrome, in glandular enlargement of the neck, in metastatic malignant disease in which no primary growth can be discovered, and in all cases of suspected pituitary tumor, the nasopharynx should be adequately examined.

F. DAMRAU.



SOLOMON, H. C., AND TAFT, A. E.: **Effects of Antisymphilitic Therapy as Indicated by the Histologic Study of the Cerebral Cortex in Cases of General Paresis. A Comparative Study of 42 Cases.** *Archives of Neurology and Psychiatry*, October, 1922, viii, No. 4, p. 341.

The problem in this investigation was to determine whether any changes due to antisymphilitic treatment can be observed by histologic methods. There is a considerable divergence of opinion as to the efficacy of antisymphilitic treatment in patients with general paresis. On theoretic grounds, likewise, there are two opposing points of view. One view holds that meningitis and perivascular infiltration can be reduced and the spirochetes killed, and that, with the cessation of toxin formation, degenerative changes may be halted. A contrary opinion, championed by Noguchi and Moore, points out that the spirochetes are probably in the deep tissue of the cortex at some distance from the vascular supply, that antisymphilitic drugs are on the whole prevented by a filtering process from reaching the central nervous system, and that they do not penetrate to spirochetes in the deeper situations and therefore do not accomplish any noteworthy therapeutic effect.

In order to determine whether there was any evidence of change in the histologic structure resulting from treatment in cases of general paresis, a series of brains from paretic patients who had received treatment was studied in comparison with a group of brains from untreated paretic patients. The material selected consisted of brains of patients, diagnosed as having general paresis, who died in one of the Massachusetts state hospitals. Twenty-seven of the patients had received antisymphilitic treatment in an attempt to modify the paretic process; 15 of the patients had received no such treatment since the onset of psychotic symptoms.

F. DAMRAU.

THALHIMER, W.: **Epidemic (Lethargic) Encephalitis. Cultural and Experimental Studies. Second Communication.** *Archives of Neurology and Psychiatry*, September, 1922, viii, No. 3, p. 286.

The investigations of epidemic encephalitis by Loewe and Strauss, which antedate other similar studies, seem to indicate that a

filtrable virus is regularly associated with the disease. This virus causes a disease in animals which is similar to, and in many animals identical with, epidemic encephalitis. Inasmuch as Amoss has shown that the serum from convalescing cases of epidemic encephalitis does not protect monkeys from poliomyelitic virus, whereas serum from convalescent poliomyelitis cases does protect monkeys from this virus, it would appear that the respective viruses of the two diseases are not identical but closely related biologically. The microscopic cerebral lesions in animals inoculated with encephalitis virus are the same as those which have been found to be characteristic of this disease. From this virus, an extremely minute filtrate organism was grown in the ascites-tissue culture medium perfected by Noguchi. Cultures of this organism likewise produced the characteristic disease and lesions in animals.

The experimental and cultural methods used throughout this investigation were the same as those previously described by Loewe and Strauss. The results were such as to confirm the work of these investigators. The characteristic brain lesions observed were perivascular round cell infiltration and focalized areas of degeneration and round cell infiltration, most numerous in the pons and midbrain region. Necropsies were performed on 7 cases of epidemic encephalitis. Positive results, including both cultures and animal inoculation, were obtained from all of these brains. The spinal fluid from 35 cases yielded positive cultures in 24 (70 per cent) instances. Positive animal inoculation was secured with spinal fluid from 22 of these cases. The total of positive results, by both cultures and animal inoculations, was obtained with spinal fluids from 85 per cent of the cases studied. Nasopharyngeal washings were similarly tested from 5 cases; positive animal inoculation was obtained in all 5, positive cultures, in 4.

The total number of rabbits inoculated intracranially with either original material or filtrates of the brain of animals which succumbed was 295. Of these 167 died; 108 showed characteristic lesions of epidemic encephalitis. Cultures in the third, fifth, and fifteenth generations were inoculated intracranially into rabbits with the same percentage of positive results as with injections of virus, and the minute organism was again recovered from the brain filtrate of the animals that died. Some of the cultures were carried through twenty-



two generations. Cultures were repeatedly filtered and the minute organism recovered from the filtrate.

F. DAMRAU.

DRAGSTEDT, L. R., CANNON, P. R., AND DRAGSTEDT, C. A.: **Factors Controlling the Intestinal Bacteria.** *The Journal of Infectious Diseases*, September, 1922, xxxi, No. 3, p. 209.

Evidence is presented which indicates that other factors than the character of the diet are concerned in determining the type of intestinal flora. Either a complete obstruction or a stasis in the passage of the intestinal content results in a proteolytic flora irrespective of the character of the diet. It is probable, however, that the mechanism of bacterial control is identical in both cases and is dependent on the presence of utilizable carbohydrate in all parts of the small intestine and colon. In conditions of stasis or obstruction even such carbohydrates as dextrin and lactose are probably completely absorbed in the upper part of the intestine and so cannot affect bacterial growth lower down. The experiments with the closed intestinal loops demonstrate that the intestinal juice is not markedly bactericidal, at least so far as the proteolytic group of organisms is concerned. The disappearance of the Gram-positive aciduric bacteria is probably due to the fact that carbohydrates are absent from such loops and that the intestinal juice is quite markedly alkaline in reaction.

M. M. BANOWITCH.

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# INTERNATIONAL MEDICAL DIGEST

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## SECTION ON GENERAL MEDICINE

MEYER, J., AND IVY, A. C.: **Studies on Gastric and Duodenal Ulcers: The Relation of Epigastric Hernia to Gastric Ulcer. A Clinical and Experimental Study.** *The Journal of Laboratory and Clinical Medicine*, October, 1922, viii, No. 1, p. 37.

The authors were unable to demonstrate experimentally in dogs that epigastric hernia with omentocoele is a causative factor of gastric ulcer. They tacitly suggest that the tendency to a local pocket formation in the wall of the stomach brought about by the "tugging" of the omentocoele may be an etiologic factor of gastric ulcer in man. They believe that concomitant gastric ulcer and epigastric hernia in man is coincident and not that the hernia has a direct etiologic relationship to the ulcer. Epigastric hernia does not cause hyperacidity, as the gastric findings in such cases are within the normal variation. They are convinced that operation is definitely indicated.

C. M. ANDERSON.

THAYER, W. S.: **The Cardiac Complications of Gonorrhea.** *Bulletin of the Johns Hopkins Hospital*, October 22, 1922, xxx, No. 380, p. 361.

The writer reviewed the cardiac complications of gonorrhea occurring at Johns Hopkins Hospital covering a period of 33 years. He found that in 176 instances of acute endocarditis of determined



origin 20, or 11.3 per cent, were gonococcal. Gonococci were cultivated intra vitam, 10, or post-mortem in 14 instances; they were demonstrated bacterioscopically following negative cultures intra vitam or post-mortem in 6 instances. In some cases reproduction of an acute urethritis in man was obtained by inoculation with gonococci obtained at necropsy from the affected valves. Arthritis occurred in 41.1 per cent of the cases.

The cardiac complications of gonorrhea, appear usually in the form of an acute or subacute vegetative and ulcerative endocarditis which comes on at varying periods in the course of the infection, often in the absence of other apparent complications. The onset may be sudden or more gradual, but is generally rather acute. There are chills and high remittent or intermittent fever, rapidly developing anemia and considerable leukocytosis. The constitutional symptoms are those of grave infection. They are early and profound. A petechial eruption is often present.

The aortic valves are those most commonly involved but, as in all endocarditides, the right side appears to be affected more often than in the chronic, so-called rheumatic valvular disease. The writer found that involvement of the pulmonary orifice was rather common. Usually the healthy undiseased valves were implicated. Mural endocarditis was frequent. Endocarditis, pericarditis and suppurative myocarditis were not unusual. It was found that gonorrheal endocarditis is in general, a malignant process pursuing a progressive and fatal course. In its virulence it occupies a position between the slower and more subacute *Streptococcus viridans* and *Bacillus influenzae* infections and the more virulent *Pneumococcus* and *Streptococcus hemolyticus* endocarditides.

Mild forms of gonorrheal endocarditis are relatively rare. Gonorrheal cardiac infections as a whole are by no means very unusual.

D. LAYTON.

MacCARTY, W. C.: **The Relationship of Fibrosis and Hyalinization to Longevity in Cancer.** *The Journal of Laboratory and Clinical Medicine*, October, 1922, viii, No. 1, p. 42.

Fibrosis and hyalinization are rather infrequent in the series of gastric carcinomas which has come under the observation of the auth-

or. There are two organs in which these factors are more frequent and it was thought that a study of these might throw some light on the problem of the defensive mechanism in cancer. Two series of patients, all of whom had died of recurrence or metastasis following radical resection, were studied. The following generalizations were made:

The frequency of fibrosis in association with cancer of the breast and rectum is practically the same in both organs. The frequency of hyalinization in association with cancer of the breast is greater than in cancer of the rectum. When fibrosis is present in association with cancer of the breast and rectum the postoperative length of life is increased 34 per cent. When hyalinization is present in association with cancer of the breast and rectum the postoperative length of life is increased 40 per cent. When the two factors (fibrosis and hyalinization) are present in combination in association with cancer of the breast and rectum the postoperative length of life is increased over 56 per cent.

C. M. ANDERSON.

ASCHOFF, L.: **The Cause of Gall-stones** (Über die Entstehung der Gallenblasensteine). *Klinische Wochenschrift*, July 1, 1922, i, No. 27, p. 1345.

All modern theories of the causation of gall-stones are based on Naunyn's conception of gall-bladder stasis plus infection by the colon bacillus. The infected gall-bladder secretes cholesterin and calcium. Naunyn did not take into consideration cholesterin metabolism. Aschoff divides gall-stones into inflammatory and non-inflammatory. The latter are almost pure cholesterin, contain little or no calcium and no albumin. There is little or no lamination. They are usually solitary and the gall-bladder shows no inflammatory changes. It is this type which usually proceeds symptomless, occurs at all ages, and is usually an accidental operative, or post-mortem finding. It depends upon an increase of cholesterin in the blood. It is not the epithelial cell of the gall-bladder which secretes cholesterin, but the hepatic cell which separates it from the blood. This may account for the occurrence of gall-stones from the cholesterinemia of pregnancy. Rapid loss of weight in the obese is also a predisposing



cause. Non-inflammatory stones may produce symptoms when they become impacted in the biliary passages. Secondary infection may then take place. Other stones of inflammatory origin may form behind this non-inflammatory occlusive stone. A combination stone may also form.

H. JOACHIM.

PORGES, O., AND ADLERSBERG, D.: **Neurotic Respiratory Tetany and Its Treatment with Ammonium Phosphate** (Ueber die neurotische Atmungstetanie und ueber die Behandlung mit Ammonphosphate). *Klinische Wochenschrift*, June 10, 1922, i, No. 24, p. 1200.

Vernon in 1909 observed that voluntary increase in the respiration produces symptoms of tetany. It is probably due to excessive ventilation of the lungs. The  $\text{CO}_2$  in the blood becomes exhausted and the alkalinity increased. The calcium salts of the blood become less soluble and to this the symptoms of tetany are due. Injection of bicarbonate of soda also produces tetany. The symptoms of tetany disappear on the administration of  $\text{CO}_2$ , excessive muscular work, starvation and ammonium salts of acids as phosphorus. The author has used ammonium phosphate with good results.

H. JOACHIM.

VAN LEEUWEN, W., AND VAREKAMP, H.: **The Tuberculin Treatment of Bronchial Asthma** (Ueber die Tuberkulinbehandlung des Asthma-bronchiale). *Muenchener med. Wochenschrift*, June 9, 1922, lxi, No. 23, p. 849.

The authors used Walker's cutaneous reactions for protein sensitization. Out of 631 tests they were able to get 5 positive reactions. They had noted the susceptibility of asthmatics to tuberculin. They had previously reported in the *Lancet* 28 cases treated with tuberculin injections. Of these, 18 cases were completely cured. Since the original report they have extended the treatments to 150 cases with about the same percentage of cures. A detailed account is to be published. The technic consists of injecting 1 c. c. of 1 to 100,000 old tuberculin every other day.

H. JOACHIM.

MEANS, J. H., AND BURGESS, H. W.: **The Basal Metabolism in Nontoxic Goiter and in Borderline Thyroid Cases, with Particular Reference to Its Bearing in Differential Diagnosis.** *Archives of Internal Medicine*, October, 1922, xxx, No. 4, p. 507.

This paper deals with an analysis of the metabolic readings in 1000 patients studied at the Massachusetts General Hospital; 2049 determinations were made on these patients.

Of the 300 patients with outspoken hyperthyroidism, but one failed to show a metabolic rate of more than + 10 per cent, and that patient had very mild symptoms.

Patients with diseases of the blood, particularly leukemia, showed a high proportion supranormal readings, 30 per cent of this group exceeding + 10 per cent.

Of the suspected, but unproved hyperthyroid cases, 36.2 per cent gave abnormally high readings. Twelve per cent of suspected hypothyroid cases showed increased metabolism, and in 21.4 per cent of these cases it was below + 10 per cent.

The supposedly nontoxic goiters, of which there were 102, were of interest. Thirteen, or 12.9 per cent gave high readings, indicating a probable hyperthyroidism, and 6, or 5.7 per cent gave low readings. In 83 the metabolism was normal.

Forty-one pathological endocrine conditions other than disease of the thyroid gland were studied; 24.4 per cent showed increased metabolism and 21.4 per cent decreased metabolism.

A miscellaneous non-endocrine group, consisting of 99 patients, included 8.1 per cent with a subnormal reading and 20.2 per cent showing increased rates.

The nonthyroid conditions giving rise to increased metabolism include fever, acromegaly, leukemia, and severe anemia. Starvation, hypopituitarism, and hyposuprarenalism all give low readings. If such conditions as these are ruled out, the authors believe that an increased metabolic rate is strong presumptive evidence of hyperthyroidism and a low basal metabolic rate of hypothyroidism. "To that extent", they state, "the metabolism test is distinctly useful in differential diagnosis. Like all other laboratory tests it should only be interpreted with due regard to all other clinical and laboratory findings, and with due regard for its limitations and pitfalls".

T. HOWARD.



LEVY, R. L.: Clinical Studies of Quinidin. II. Alterations in the Cardiac Mechanism after Administration of Quinidin to Patients with Auricular Fibrillation with Consideration of Certain Toxic Effects of the Drug. *Archives of Internal Medicine*, October, 1922, xxx, No. 4, p. 451.

Eleven patients with auricular fibrillation treated with quinidin were studied electrocardiographically, 507 tracings being taken, and the curves measured and analyzed. In 3 of the patients normal rhythm was restored and in 8 it was not restored. The first effect noted was usually an acceleration of the ventricular rate. Ectopic beats were next in frequency, either auricular or ventricular in origin. With the accumulating effect of the drug, the fibrillations of the auricle became coarser, and this was usually followed by a slower and more regular auricular action, the so-called impure flutter. Proceeding a return to a normal rhythm, there was usually a period of pure auricular flutter, the auricular waves being quite regular. This stage was sometimes reached even when it was impossible to force a return to the normal sinus rhythm. During the course of treatment, extra ventricular systoles sometimes occurred as frequently as after every systole of the ventricle of supraventricular origin, and on two occasions there were observed periods of ventricular tachycardia, all of the impulses arising in the ventricle. Levy considers this an emphatic danger signal, as he recalls that dogs poisoned with digitalis or strophanthin often show ventricular tachycardia just before the occurrence of ventricular fibrillation, with its necessarily fatal outcome. One patient under the influence of quinidin showed a progressive increase in rate and developed symptoms and signs of heart failure, which however were controlled by discontinuing the quinidin and administering digitalis.

A study of the curves also made it apparent that the occurrence of extrasystoles induced early in the treatment could sometimes be controlled by the continuation of the drug. There was no evidence that the auriculo-ventricular conduction was affected, but a delay or change of the course of the impulse through the ventricle itself was suggested by several curves showing widening and notching of the QRS complex. The shifting periods of fibrillation, impure flutter, and flutter seemed to further substantiate the theory of their common cause, a circus contraction of the auricles. The author concludes

that the drug carefully administered possesses great therapeutic virtue, whereas unintelligently given, it may be expected to cause undesirable effects. In certain patients it is toxic for heart muscle even in doses ordinarily regarded as safe for clinical use. He advises the preliminary administration of a small dose in order to see whether the patient has an idiosyncrasy for the drug.

T. HOWARD.

**PRON, L.:** **Considerations on the Value of Various Methods of Investigating Occult Hemorrhages of the Digestive Tube and on Certain New Methods.** *Archives des Maladies de l'Appareil Digestif et de la Nutrition*, May, 1922, xii, No. 3, p. 204.

On the basis of experimental and clinical researches on the comparative merits of various methods of detecting occult blood, Pron came to the following conclusions:

(1) For routine work, chemical tests are the only ones which should be employed. Among these, Meyer's phenolphthalein method and Weber's guaiac test, which are so extensively used today, ought to be completely rejected, along with Adler's old benzidin test and the pyramidon method of Thévenon and Rolland. All of these tests are unfitted for clinical use, because of either lack or excess of sensitivity, or because of instability or lack of specificity.

The best method, and at the same time the safest, is that of Boas, using chloral, alcohol, and guaiac. This method is also sufficiently delicate. Boas replaced ether with alcohol in the treatment of the feces and proposed the following technic: To 2 c. c. of a 70 per cent alcoholic solution of chloral, add 10 drops of acetic acid; shake in a test tube and allow to stand for 5 minutes. Then pour the mixture into a thoroughly dried glass containing a pinch of finely pulverized guaiac, and add 20 drops of water oxygenated to 3 per cent, or better, a pinch of barium peroxid. The procedure from this point on is the same as in other guaiac tests.

The benzidin method of Adler, as it has now been *modified*, is equally deserving of confidence. The modification of technic suggested by the author entails the preparation of a cold, *fresh* solution by adding a pinch of benzidin to several cubic centimeters of acetic acid. This solution is cold, prepared anew for each examination, and more concentrated than that of Hallez.



(2) The microscopic method, by finding Teichmann's crystals, possesses the great advantage of being specific, but lacks sensitivity. It cannot be applied to eliminate doubtful cases.

(3) From the standpoint of specific and delicate reaction, the spectroscopic method of Snapper gives the most trustworthy results; but the use of this test is confined to the laboratory.

H. M. FEINBLATT.

CHRISTOPHE, L.: **The Etiology of Recurrent Ulcer and Gastro-jejunal Ulcer.** *Archives des Maladies de l'Appareil Digestif et de la Nutrition*, June, 1922, xii, No. 4, p. 233.

The question of the etiological mechanism of gastric and duodenal ulcer has given rise to a considerable amount of work, mostly of a non-experimental nature. While it is recognized that many factors may enter into the causation, the rôle played by infection has recently come to the front. The theory formulated by Mathieu-Sencert-Tuffier and their collaborators represents the consensus of opinion. They state that the usual steps are (1) the localization in the gastric or duodenal wall of bacteria, the origin of which, until very recently, was entirely unsuspected, (2) hemorrhage with subsequent necrosis of the mucosa, and (3) a process of autodigestion by the pepsin and hydrochloric acid of the tissues thus devitalized. Rosenow took hold of this theory, supported it with a vast amount of experimentation, showed that the pathogenic organisms may be carried by the blood from a distant focus of infection, and pointed out that these organisms possess an elective affinity for gastric or duodenal mucosa. This theory of "focal infection" is now the order of the day in the United States.

Clinical cases and animal experiments are here reported which serve to confirm the theory of focal infection as a causative factor in gastric ulcer. Thus, as a clinical deduction, it appears to be absolutely necessary in any case of gastric or duodenal ulcer to make a thorough examination for a focus of infection, with particular reference to the tonsils, teeth, and nasal accessory sinuses. A radiographic examination should be employed to determine the condition of the teeth. Operative intervention should in every case be preceded by a thorough search for foci and a prolonged alkaline regimen.

Many patients have submitted to two or more operations for gastro-jejunal ulcer. The expectation of early recurrence in this condition constitutes the great bugbear of the surgeon. Out of 55 cases reported by Leiblein, 37 have already submitted to operation for recurrence. This fact should furnish convincing proof that the etiological factor has not been eradicated by the excision of the ulcer and should serve as a great incentive to look for foci of infection. The removal of such foci together with Sippy's strict dietetic regimen might possibly effect a cure, in cases in which until now the knife appeared to be indicated. The 3 cases here reported would support this contention. They were not operated for recurrence and a cure has apparently been brought about by medical means.

H. M. FEINBLATT.

THAYSEN, T. E. H.: **On the Etiology of Habitual Chronic Constipation and of Constipation in Ulcer of the Stomach.** *Archives des Maladies de l'Appareil Digestif et de la Nutrition*, June, 1922, xii, No. 4, p. 250.

There are two forms of constipation, chronic habitual constipation and constipation arising reflexly from ulcer of the stomach, which can be distinguished from each other neither by the clinical examination nor by radiography. Nevertheless there are marked differences in the ages at which these two conditions appear. The existence of the habitual form due to constitutional predisposition can only be recognized by the fact that it comes on at an early age—the earlier the better—and by the absence of any demonstrable cause. The more the constipation appears to develop of its own accord and the less it is associated with other symptoms, the more certain we become of its constitutional nature.

The statistical data are based upon 375 cases of chronic habitual constipation (175 males and 200 females) and 184 cases of constipation due to gastric ulcer (98 males and 86 females). The relative frequency of the two conditions in the sexes is indicated by the above figures. As to age incidence, the constitutional form occurred after the age of 26 in only 27.5 per cent of the males and 13.5 per cent of the females; whereas the number of cases in which the reflex type occurred after this age exceeded 75 per cent.

H. M. FEINBLATT.



CADE, A., AND MORENAS: **Gastric Ulcer of Syphilitic Origin.** *Archives des Maladies de l'Appareil et de la Nutrition*, March, 1922, xii, No. 2, p. 019.

Syphilis can attack the stomach in various ways: directly by giving rise to the typical lesions, gummata, or indirectly by affecting the nerves and vessels of the stomach. Round ulcer of the stomach can be indirectly and gradually produced by syphilis through the intermediary of the vascular lesions induced by that disease. This process results in a symptom-complex of ulcer of special type; it is observed in men of mature age, complaining of gastric pains which are atypical in their relation to meals. Hyperchlorhydria is absent. Hematemesis is frequent and may be so profuse as to cause death. The pathologic specimen shows macroscopic vascular lesions, at the periphery of which are the microscopic lesions which are responsible for the formation of the ulcer. The character of these lesions explains the relative inefficacy of antisyphilitic treatment. It ought always to be tried, but when results are not obtained, surgical intervention ought to be considered. Although non-syphilitic round ulcer can be differentiated by other signs in the majority of cases, the above syndrome together with the suitable age of the patient should always suggest a leptic origin.

H. M. FEINBLATT.

VILLARET, M., BENARD, H., AND BLUM, P.: **Contribution to the Etiological Study of Chronic So-called Alcoholic Cirrhoses. Clinical Arguments in Favor of Their Combined Alcoholic and Syphilitic Nature.** *Archives des Maladies de l'Appareil Digestif et de la Nutrition*, September, 1922, xii, No. 5, p. 305.

For a long time alcohol has been considered the sole factor in the production of cirrhosis. The frequency of lesions of the liver among alcoholics, the alcoholic history obtained from patients with cirrhosis, the statistics concerning the incidence of cirrhosis in different countries and among various vocations, all furnish incontestable arguments.

It appeared to the authors that one factor associated with alcoholism plays a very important rôle in the causation of portal cir-

rhosis, *viz.*, syphilitic infection. For a long time it has been known that syphilis can provoke sclerotic lesions in the liver. Certain cirrhoses of Hanot's type are known examples.

Careful histories and physical examinations very frequently revealed evidences of syphilis in patients with cirrhosis. The family history often pointed to lues in the antecedents. In women, careful interrogation elicited the information of many miscarriages or premature births. Examination often gave signs of an old syphilitic infection, either cutaneous, or involving the mucous membrane, or more often, visceral or nervous.

Side by side with the clinical arguments, systematic Wassermann tests corroborated the important part played by syphilis in the causation of cirrhosis. Letulle and Bergeron obtained a positive Wassermann from almost half of a group of 152 patients with cirrhosis. Moreover, in this series, 6 doubtful reactions became frankly positive with a provocative test.

Among 13 patients with portal cirrhosis whom the authors studied serologically, 9 gave a positive Wassermann.

The comparative study of the reaction of the blood and the ascitic fluid has led to different interpretations. Eismein and Parvu in 1909 found that the complement fixation reaction in the ascitic fluid was apt to be more strongly positive than in the blood, and they thought that this finding served as a criterion as to the luetic nature of the hepatic lesion.

At the present time the rôle played by syphilis in the production of portal cirrhosis appears to be considerable; leaving out hepatitides properly termed specific, syphilis associated with alcoholic intoxication is probably the etiological factor in the greater portion of cases formerly labelled alcoholic cirrhoses. This idea is not merely of nosographic interest. It can be used in the treatment of portal cirrhosis in a new manner, one which has already been successfully applied.

H. M. FEINBLATT.

DEAVER, J. B.: **Cyst of the Liver.** *Southern Clinics North America*, 1922, ii, 55.

Patient was a male, aged 33 years. Six years ago he began to suffer from more or less constant epigastric pain, gradually increas-



ing severity, for which he was treated medically for one year, without relief. A diagnosis of chronic appendicitis led to the removal of the appendix, which showed evidence of marked chronic disease of that organ. After this the patient felt well for about 3 years, when the epigastric pain recurred with increasing severity. For the past two months it has been almost constant, aggravated by eating, regardless of the kind of food taken. There was occasional nausea, but no vomiting. Bowels alternately regular and constipated. No urinary symptoms. Appetite poor. Constant headache. Loss of 5 to 8 pounds in the past five months. No venereal history.

Physical examination is negative except for the abdomen. There is slight rigidity and tenderness on deep pressure at the median line at a point corresponding to the site of the gall-bladder. The blood count is negative and so is urinalysis. A test-meal was given, all of which the patient vomited. The stomach-tube was then passed. Quantity obtained 80 c. c., total acidity, 12. Also negative for lactic acid. Stools positive for blood.

There is evidently an upper right abdominal infection or the results of such an infection. The fact of a previous chronic appendicitis gives a focus from which the infection may have spread.

*Operation.*—The usual upper right rectus incision was made, going through the aponeurosis of the internal oblique muscle. The gall-bladder was near the median line, but in a very deep location and surrounded by a few cholecystic adhesions. The gall-bladder is normal. A mass which looks like a gall-bladder protrudes from the under surface of the liver. It does not seem to be a hydatid cyst. It is liver substance. The cyst was removed intact. It had no odor and was perfectly soft; on section it seemed to be filled with sebaceous material.

The operation was completely in the usual manner. The laboratory report on the specimen reads: A fibrous walled cyst, measuring 3 cm. in diameter; received opened, and with some liver tissue adherent to it. The cyst is smooth, shiny, congested on its outer surface, and pale and smooth on the inner surface.

*Microscopy.*—The lining of cyst is partially necrotic, but gives evidence of having been a sort of mucosa. The wall consists of dense connective tissue. Origin unknown, but may have been a diverticulum of the gall-bladder. Liver tissue shows moderate cloudy swelling and fatty degeneration.

SHERNDAL, A. E.: **Arsphenamin. Some Factors Which Influence Its Colloidal Properties.** *The Journal of Laboratory and Clinical Medicine*, September, 1922, vii, No. 12, p. 723.

A number of different arsphenamins have been prepared by varying the process of reduction and precipitation. The method of reduction produces certain differences in the characteristics of the arseno base in regard to stability and extraneous impurities. On conversion into the dihydrochlorid precipitation by means of ionized solutions yields in every case products whose gelatinous characteristics, as evidenced by the viscosity of aqueous solutions and insolubility in methyl alcohol, are much more marked than when the dihydrochlorid is prepared by the use of anhydrous non-electrolytes. This may be explained by the fact that arsphenamin is inherently a colloidal substance, and that electrolytes in certain concentrations produce coagulation of the disperse phase of its emulsoid sols. These microscopic observations on the colloidal variability of arsphenamin, suggest the occurrence of less obvious, but similar differences in the disperse state of solutions prepared for intravenous injections, and consequently have a direct bearing on biological and clinical results obtained by their use.

C. M. ANDERSON.

MEZER, J. H.: **Autografting of the Ovary.** *Boston Medical and Surgical Journal*, 1922, clxxxvi, 604.

In young women, after removal of the ovaries, nervous symptoms are apt to be severe and persist for a very long time. Autografting will in a very large percentage of these cases entirely ward off these nervous symptoms or modify them to a great extent. If the ovary, where the tubes have been removed, is wholly or in part left with its normal supports, grafted into the uterus, buried in the broad ligaments or underneath the parietal peritoneum, patients often complain of pain, or changes may take place in the graft, requiring a secondary operation. After removing the ovaries they are put in warm normal salt solution until the abdominal operation is completed and the incision closed. Then as much of the ovaries as looks normal and is wanted can be placed under the skin just inside, the



anterior superior spinous process of either ileum. After transplantation, where the uterus is left the ovary remains unchanged from four to six months. During this time the patient has the symptoms of the menopause. After a while it becomes active, somewhat enlarged and painful. The symptoms of the menopause subside and menstruation reappears. Menstruation is always irregular. If menstruation does not appear, symptoms of the menopause occur, showing that it is the suppression of menstruation which causes the symptoms of the change of life. The history of a case is given. During the four months following the operation and up to the time of the first menstruation, she was troubled greatly by "hot flashes and sweating." Menstruation wholly relieved these nervous symptoms.

GRIFFITHS, H. E.: Trauma as a Cause of Chronic Gastric Ulcer.  
*Lancet*, 1922, ii, 329.

The case here recorded is one of innocent gastric ulcer in which trauma seems to have played an important part as a causative factor.

Laborer, aged 58, struck in the epigastrium with a spade. Collapsed and vomited blood-stained material; in hospital was treated for gastric ulcer. In an exploratory laparotomy nearly two months later an ulcer about a quarter of an inch in diameter was found on the anterior aspect of the stomach near the pylorus and the lesser curvature. No adhesions to the stomach; walls of the ulcer were only slightly indurated. Wound closed. Refused a further operation and discharged. Two months later he had a recurrence of the hematemesis and was readmitted. A second operation was performed, the stomach was found to have several adhesions to the anterior abdominal wall and one to the liver. These were broken down or divided and the stomach examined. Ulcer was slightly larger and the stomach wall in its neighborhood indurated over a larger area. Posterior gastrojejunostomy was performed and the vestibule of the stomach and the pylorus excised. Abdominal wound closed.

In view of the facts this author thought that when first seen the ulcer was in a comparatively acute stage, and was started at or about the time of the accident.

DANDY, W. E.: **Diagnosis, Localization and Removal of Tumors of the Third Ventricle.** *Johns Hopkins Hospital Bulletin*, 1922, xxxiii, 188.

In one patient, a woman, 24 years of age, the only symptoms were those referable to intra-cranial pressure. By cerebral pneumography, it was determined that each lateral ventricle was greatly enlarged, but there was no communication between them. Hence it was concluded that there must be a tumor in the third ventricle and occluding each foramen of Monro; that the tumor must be small, because neither ventricle was dislocated away from it. A large bone flap was turned down as in a pineal approach, and the corpus callosum split posteriorly for about 5 or 6 cm. The right lateral ventricle was then opened through the mesial wall at the septum lucidum. No tumor could be seen; the right foramen of Monro seemed normal on inspection from this lateral ventricle, but a probe would not pass through it, an obstruction being encountered in the third ventricle. The foramen of Monro was then widened and a small encapsulated, spherical tumor, about 1 cm. in diameter, easily shelled out in toto. The tumor was of ependymal origin. The patient recovered. Without cerebral pneumography localization of the tumor and consequently its removal would have been impossible.

WILLIAMS, C. M.: **The Diagnosis of Some Eruptions on the Hands and Feet.** *Archives of Dermatology and Syphilology*, 1922, v, 161.

Parasitic fungi, especially tinea epidermophyton, is the cause of many obscure eruptions of the hands and feet. Aside from these there are a variety of eczemas of these parts, whose etiology is obscure.

*Eruptions on Feet.*—These form three main types or classes: (1) That which produces callus, with more or less scaling. The second is characterized by maceration of the skin between the toes, especially the third and fourth interspaces, and between the little toe and the sole. This has tiny deep vesicles with sodden central parts; sheets of white friable epidermis, easily removable and leaving a red glistening, but dry surface. May be mild or so severe as to interfere with walking; may suggest subacute cellulitis. Probably all



are mycotic in origin; mycelial elements were found in 13 out of 36 cases; growths obtained form 5, the epidermophyton in 2; trichophyton laticolor, trichophyton acuminatum and trichophyton plicatile from one each. Treatment was with Whitfield's ointment, with increase of the strength of the ointment, to 8 and 16 per cent respectively of the active drugs. This brought about a cure, with persistence in treatment. A third type of eruption was found on the hollow of the instep, consisting of small, deep vesicles, sometimes singly, usually in the regular groups; skin between vesicles in the early stages is normal. As vesicles grow older, some ruptures discharging a small amount of serum, and then dry quickly. Kaufmann-Wolff states that this rapid drying is a diagnostic point between tinea and eczema. Vesicles drying without rupturing leave a small brownish dot; in the Negro, the pigment increase is noticeable in this dot. The next stage is that of dry, slightly scaly patch with fresh vesicles appearing in the middle or beyond the margin. In a series of 15 cases, the trichophyton was demonstrated from vesicles. In 6 cases, cultures from 2 showed epidermophyton and trichophyton laticolor.

*Eruption on the Hands.*—These are much more difficult to classify because they are more varied and because the isolation of the fungi are much more difficult than in the foot. Antiseptic ointment makes demonstration of the parasite impossible. The etiology is most important in the making of the diagnosis. External irritants cause eruption, which vary greatly with the character of the irritant. For instance, eruptions on the hands in washerwomen often found over the knuckles and on the dorsum of the hands; the dorsum being the most acutely inflamed part very often; no tendency to produce deep vesicles on the sides of the fingers; while palms show only diffuse congestion with thickening and scaling. The eruption from poison ivy, and similar irritants, produces a good deal of serous exudation, with puffy swelling.

Acute eczematoid dermatitis is another type of infection, usually confined to the dorsal surface, showing a large number of vesicles, sometimes single, usually in fairly well-defined groups; there is congestion and swelling of the skin between and under the vesicles. There may be more generalized eruption. However, there is no fungus to be detected. It is treated with Lassar's paste, but aggravated by Whitfield's ointment.

There are two types of eruption similar to those on the feet, which are likewise mycotic. In the first, eruption is a maceration of the skin at the base of an interdigital cleft; epidermis being removed, a bright red shiny surface is left; may be dry or moist. It yields readily to Whitfield's ointment, or an alcoholic solution of silver nitrate. The second type shows deep vesicles along sides of the fingers, or on the palms. Does not go beyond the wrist. May be confined to the lateral surfaces of the fingers. This is treated with Whitfield's ointment as an antiseptic, then followed with calamine lotion. He cites a case in which the greater part of the dorsum of one hand was affected; involving the lateral surfaces of the proximal phalanges in a slight extent. The center of the area was rough and scaly, with a few papule-vesicles here and there. The border showed tiny papules and papulo-vesicles. Myoelia was found in abundance, in scrapings from the dorsum, and from the vesicles between the fingers.

The author concludes that the demonstration of the organism is much more difficult from the eruptions occurring on the hands. It may be that some are caused by an external irritant, but he believes that most, if not all, of these cases may be found to be parasitic.

*Discussion.*—Dr. Corlett emphasized the importance of the tinea in the so-called eczemas of the hands and feet. By careful examination, systematically, for this parasite, he states that fully 90 per cent of the cases heretofore called eczema, showed the fungus, especially during the first part of the year; fewer are noted in the winter time; fungus may be found only on the hands in a few cases. Tendency to have a repeated occurrence, apparently dormant, for a few months, to break out again at certain periods. Dr. Towle believes that hyperhydrosis is associated with the infection of the fungus. He treats hyperhydrosis, with crude, coal-tar in form of a paste, the stiffer the paste the better. Dr. Fordyce, of New York, confirms the statement of the others and says that the cases of eczema are being separated into those that are caused by external irritants, those by streptococci, and by the fungi, so that few conditions are now called eczema. The most effective treatment in his hands has been the use of fractional doses of x-ray.



BLUM, L.: **Some Remarks on the Treatment of Grave Diabetes** (*Quelques remarques sur le traitement du diabète grave*). *Paris médicale*, 1922, xii, 378.

It is generally admitted that the treatment of grave diabetes gives only mediocre results; powerless to arrest the fatal evolution of the disease, it imposes on diabetics troublesome privations, without compensating them with an improvement in their condition. Frequently one concludes that it is better to abstain from all treatment. The author is convinced that this point of view is correct only for a small minority of the patients and that in the majority of cases, treatment can be of great value in obtaining not only a long survival but also a very supportable existence.

Three illustrative cases are given. In the first patient who was very toxic and presented the first signs of coma, a profound change was produced within four weeks; the asthenia, the uncertain gait, the anorexia disappeared, and fifteen days later the patient was able to take up work. At the same time there was a complete change in the urinary signs, which gave testimony of the progress accomplished. The acetonuria, which had reached 7 to 8 grams for 24 hours fell to the normal rate of some centigrams, the glycosuria disappeared.

In the second patient the disease symptoms, weakness and lack of appetite decreased; however, the influence on the metabolism was less marked, as the acetonuria persisted; from 2 or 3 grams it fell to about 0.30 grams daily average. The glycosuria disappeared the glycemia fell from 3 grams to 2 grams and often reached lower marks; after a period of carbohydrate alimentation for 7 days it decreased to 1.2 grams per liter.

In the third patient the treatment enabled him to resist an infection which had necessitated three surgical operations. He returned to work six weeks after beginning the treatment. In all three patients the treatment produced marked improvement.

The dietetic treatment is characterized by the combination of two principles: (1) alimentary restriction; and (2) the use of carbohydrates.

The alimentary restriction is not uniform; it may vary from absolute fasting to a maintenance diet. The essential point is the adaptation of the degree of the restriction to the gravity of the disease.

It is certain that too great and too prolonged a restriction may be injurious; it is none the less certain that insufficient reduction of the glycemia, glycosuria and acetonuria may also be injurious. During the fast the patients receive warm drinks and large quantities of alcohol; up to 100 or 200 grams of eau-de-vie and from a half liter to a liter of wine in twenty-four hours. Even in cases where the fast seems to be indicated absolutely it is not prolonged beyond forty-eight hours. During the fast the patients are kept strictly in bed.

The vegetable cure is a mitigated fast; the food is composed of green vegetables in large quantities. Often a small quantity of cream, about 100 grams is taken in two or three portions during the day. The quantity of fat, added to the vegetables varied according to the severity of the disease, being small in very grave cases; it averages from 50 to 80 grams per day. The ingestion of alcoholic drinks is to be recommended. One may easily prescribe four or five of these vegetable days; they have the advantage of appeasing hunger and constitute a diet with considerable caloric value, since it may reach 7 or 800 calories a day.

In the maintenance diet green vegetables and fats constitute the basis of the alimentation; the quantity of fat may reach 100 to 120 grams a day. The difficulty appears in the choice of albumen to be added. As soon as circumstances permit 2 or 3 eggs may be added to the diet. From time to time the eggs may be replaced by fish or by meat, the quantity of which should not exceed 100 grams in twenty-four hours; this meat diet should not be prolonged over more than two or three consecutive days.

The success of the cure depends on the realization of the following conditions: First, there must be a preliminary preparation in diet; second, animal albumen, particularly meat, must be rigorously excluded from the diet; in severe forms the vegetable albumen must also be reduced as much as possible; and third, the quantity of carbohydrates must be adapted to the gravity of the diabetes. In the most severe forms, it is well to begin with 40 or 50 grams of a farina, which quantity may be gradually increased while watching the urinary analysis. In very severe diabetes it is well to begin with a proportion of one gram of fat for two grams of carbohydrates; after improvement, and in less severe forms, one may give equivalent amounts of weight of carbohydrates and fats.

The author generally prescribes barley, wheat or rye farina. The



addition of fruits, for example, oranges or apples, is very agreeable to the patient, and is not injurious if one gives small quantities. The duration of the carbohydrate cure depends on the results obtained; if the influence on the acidosis is favorable, it may be continued five, six and even seven days.

The best results are obtained when the patient is successively subjected to a restriction diet and to a carbohydrate diet. The two should be alternated.

**BUNTS, F. E.: End-Results of Operations for Cancer of the Breast.**  
*Annals Surgery*, September, 1922, lxxvi, 341.

End-results gathered from the available records of his own cases, which number 600, are the basis for the conclusions reached by this author.

He states that type of cancer, age and hereditary predisposition of the patient all influence the results in any series of cases and that unless statistics are grouped with these factors in mind they are of little value in arriving at conclusions as to end-results.

His conclusions are: "(1) The successful treatment of cancer of the breast as of any other condition should be strictly individualized.

(2) The ultimate sequelæ depend more upon the stage and dissemination of the growth when it is presented for treatment than upon any defined method of operation.

(3) Greatly increased data regarding the value of pre- and post-operative use of the x-ray and of radium are required before final conclusions can be drawn, although there seems to be little doubt of the value of radium applied directly in the axilla.

(4) The substitution of the x-rays or of radium for surgical treatment cannot safely be considered at the present time.

(5) The early removal of any growth remains the one and only sure method of treatment."

He states that in his earlier cases he gave post-operative x-ray treatments as a routine procedure, but later discontinued them because there seemed to be unusually rapid recurrences in many cases so treated. "With the establishment of more certain methods for measuring the dosage, we have tentatively resumed the use of the x-

ray and are carefully watching the results. The use of deep x-ray therapy in the treatment of cancers of the breast to the exclusion of operation opens a hopeful, but thus far non-productive field of speculation."

LEWIS, R. M.: **The Irritable Bladder.** *Therapeutic Gazette*, 1922, xxxviii, 84.

If pus be found in the urine of a person who is troubled with frequent micturition, a comparatively simple problem is presented; that of finding its source and eliminating it. The diagnosis involved cystoscopy with or without ureteral catheterization, x-ray examination, etc. The bladder is examined; if this is not at fault the ureters are catheterized, and usually pus may be found coming from one kidney or the other. Calculus, pyelitis, tuberculous kidney, or an infected kidney are among the usual causes of pyuria of the upper urinary tract. In dealing with a patient, usually a woman, suffering with frequent micturition without pus in the urine and without cystitis or tumor, Neisserian or other latent urethral or peri-urethral infections must, of course, be excluded. Often too much stress is placed upon slight abnormalities detected about the external meatus. One must bear in mind the possibility of a tuberculous kidney even though there be little pus in the urine. On examining the bladder, while the ordinary ulcer is easily discovered, a careful search may be necessary to detect the so-called "elusive" ulcer of Hunner. It is not curable by ordinary measures, and commonly requires operative excision. Hyperacidity may irritate the bladder to a minor extent, however long-standing cases of urinary frequency are very rarely dependent merely on Hyperacidity. The concentration of the urine is often held responsible, but it also rarely causes serious long-standing trouble. The usual treatment for such cases, after they have been carefully investigated, consists of urethral dilatation up to a size twelve Hegar sound, with local applications to the trigonum and the urethra of silver nitrate solution two to five per cent. This may be followed by instillations, given by the family physician, along with constitutional treatment, which usually comprises rest in bed, an excess of water to drink, potassium citrate, tincture of hyoseyamus, a bland diet, etc. The author has not tried the



recently suggested treatment of injecting quinin and urea beneath the trigonal mucosa, fearing infection and sloughing. Frequency of voiding may be a mild, transitory phenomenon. It is commonly seen after labor, particularly if the labor is a difficult one, or may result from exposure or other cause. These mild cases are generally self-curative. Simple dilatation of the urethra often gives temporary relief from long-standing frequency. Cervical infection may, of course, be cleared up by local applications of silver, more often by linear cauterization, frequently by cervical repair or amputation. More conservative measures than amputation should be used, especially in young women. Hunner paid a great deal of attention to ureteral stricture, usually, according to him, a result of focal infection, as a prominent cause of vesical irritability. A displaced uterus *per se* rarely causes a very troublesome urinary frequency. If a large fibroid chokes the pelvis and makes great pressure on the bladder, one may expect its removal to relieve the patient of urinary frequency. Acute pelvic inflammatory disease or even an acute appendicitis, when that organ lies next to the bladder, may cause urinary frequency and should be treated surgically. Cancer of the cervix may by direct extension invade the bladder and cause pain and frequent urination without giving rise to any symptoms directly referable to the uterus.

CASSIRER, R.: Spasms of the Muscles of the Neck and Torsion-spasms (Halsmuskelskrampf und Torsion-espasmus). *Klinische Wochenschrift*, 1922, i, 53.

Spasms of the muscles of the neck greatly resemble other conditions which entirely belong to the sphere of the functional psychogenous diseases. For a long time these spasms were put under the head of hysteria. Oppenheim contradicts this in his last edition. Furthermore, it was very difficult to assign the syndrome to the right place among the nervous diseases. Oppenheim says that as far as we know no demonstrable changes are found in the central and peripheral nervous system, and that it represents an irritation of the nervous centers. The author thinks that it is probable that the cortex is the starting point of the disease. It may also be that the deeper sub-cortical or bulbar centers are irritated by ideogenous and emo-

tional happenings. He will assign them to the striated symptom complex. Strümpell called this symptom complex amyostatic. However, in that condition, the muscle tonus is changed and dystony exists. This is a condition which essentially differs from the well-known hypertonia of the spastic patient. These disturbances are extra-pyramidal. Dystony may exist in several muscles and may be progressive; the condition in the neck may be only part of the condition.

Microscopically, the cerebrum was swollen; the perivascular lymph spaces were dilated. The myelin of the muscle fibers was swollen. The glia nuclei were surrounded by a ring. This swelling is especially marked in the striated matter, but not very much more than in the cortex. Subacute degeneration of cells is seen in the nucleus caudatus, and in the ganglion cells. Numerous fat cells were found in the adventitia.

**McKEAND, W. J.: Differential Diagnosis Between Cholelithiasis and Duodenal Ulcer. *Lancet*, 1922, celi, 1096.**

The following case presents features which illustrate the difficulties in differentiating between duodenal ulcer and gall-stones.

Some time ago, Mrs. X., married, aged 48, consulted the author for epigastric pain and indigestion. She described the pain as a "hungry pain" because she had found that food relieved it. It came on about two hours after she had taken food and was most intense in the early morning hours. She said that it was in the center of her stomach and sometimes it went straight through to her back while at other times it went round like a girdle. She frequently had nausea when the pain was intense, but no sickness, and sometimes she complained of a sour or acid taste in her mouth. She had always been constipated and had, since her youth, suffered occasional attacks of indigestion.

Examination revealed a tenderness over the epigastrium and the right hypochondrium, its maximum point of intensity being just to the right of the middle line. Behind or about the tenth dorsal she felt a tenderness and her skin sensitiveness was much more pronounced to the right of the middle line. There was no tenderness on pressure over the tip of the ninth costal cartilage on deep inspira-



tion in a sitting position, the sign of Murphy, and no enlargement of liver or gall-bladder. She had no jaundice and the other systems were negative. An examination of the urine revealed nothing abnormal.

The presence of occult blood was found in a specimen of feces that was sent to a pathologist for examination. She was treated on the hypothesis of a diagnosis of duodenal ulcer. She was treated on the usual medical lines, being put to bed to rest for 6 weeks and carefully dieted. The pain, except for occasional attacks at night, was much relieved and she became able to take reasonable amounts of food without discomfort. The patient was then sent to France for three months. During that time she wrote that she felt well as long as she kept strictly to the diet but that the pain returned whenever she attempted to take any luxurious food. For 6 or 8 weeks after her return to London, she remained comparatively well, then her symptoms recurred as severely as before. Again she was rested and dieted and she improved again, but the improvement did not last. Her pains at night became more severe. She saw another physician who confirmed the diagnosis of duodenal ulcer and she was advised to rest and diet for 6 months. Her condition did not improve and she became very neurotic, so the author sent her to a radiologist for a barium meal.

His report was: "The stomach is active and very irritable. There is irregularity of the duodenal cap, which is in favor of duodenal ulcer. The colon is ptosed and shows marked stasis with a suggestion of adhesions between the ascending and the first part of the transverse colon."

The author advised an operation which was performed by Mr. L. E. Barrington who revealed a distended gall-bladder full of stones, with slight congestion of the duodenum in its immediate vicinity. The gall-bladder was removed and the patient recovered. Since her operation she can eat anything and she has no pain.

The presence of the type of pain so characteristic in duodenal ulcer, occult blood in the stools, the beneficial effects of rest and diet, together with the absence of Murphy's sign, of jaundice and of enlargement of the gall-bladder on palpitation or percussion, and the absence of definite signs of gall-stone colic, are the curious points of the case which led to the erroneous diagnosis.

LEWIS, D. M.: **The Prevention of Tuberculosis; Theory and Possibilities.** *American Review of Tuberculosis*, 1922, vi, 229.

Study of epidemiology of streptococcal gripe shows that it may be an activator and a complicator of tuberculosis. In regard to pulmonary tuberculosis in the rural areas, the author stated that defects of the nasopharynx, mainly those of extremely hypertrophied tonsils, with repeated acute infections, were reasonably causal of the pre-tuberculous stage in children just before puberty. This was especially true where family history was of deaths from "galloping consumption" occurring during early puberty in three others of the immediate family. Adenoids and diseased tonsils in children about the age of 6, who had localized areas of bronchitis, evidently streptococcal, was found in a family whose mother had died of consumption. Immediate operation cleared up the localized bronchitis and brought about a normal metabolism and development.

He emphasizes the fact that there may be a close relation between defects of the nasopharynx and of the upper respiratory tract, and the respiratory diseases including tuberculosis. He suggests that the pathogenic power of the tubercle bacillus of the normal nose-breather, who has a sound defensive drainage system of the nasopharynx, is much less than that of the mouth-breather, and one with a defective drainage system, defective lung aeration, and perversions of body metabolism. This factor should be given the proper place among measures preventive of pulmonary tuberculosis.

GRAY, H. T.: **Obscure Intestinal Colic.** *British Medical Journal*, 1922, i, 253.

"Intestinal Colic" may be defined as pain which occurs only during peristaltic contractions, and is absent during the quieter continuous rhythmic movements.

The characteristic feature in cases in which the pain is caused by a simple stricture of the small intestine is that the pain at first occurs at intervals, interrupted by periods of complete comfort. The normal intestinal functions are not interfered with so far as can be ascertained clinically; the pain is accentuated by hunger or the tasting of food, and is due to the exaggeration of the rhythmic waves



(by reflex vagus stimulation; these are responsible for exciting the peristaltic wave). Tenderness and continuous pain are absent, since the bowel is insensitive; but such a stricture, involving the circumference of the bowel, renders inactive a small segment of the intestine which cannot take part in the co-ordinated sequence of contraction and inhibition, a sequence which constitutes the essential feature of the peristaltic wave. Therefore, the contracting segment of the peristaltic wave immediately proximal to the stricture is not associated with the normal inhibition of the segment immediately below; so that the inert segment is forced into the lumen of the inhibited area below it.

When is intestinal colic to be regarded as a grave warning, and when is it attributable to transitory causes? This decision must rest on the ability to appreciate the various factors responsible for disorganizing the co-ordinated sequence of contraction and inhibition in intestinal peristalsis, and to identify the primary causes of such disorganization.

These may be classified under four headings:

- (a) Abnormal contents within the lumen of the bowel.
- (b) Intramural lesions, or lesions of the wall of the bowel.
- (c) Lesions of the mesentery and peritoneum.
- (d) Alteration in the relative excitability of the sympathetic and parasympathetic nerve supply and the equilibrium normally influenced by their corresponding hormones.

*Small Intestine (Abnormal Contents in the Lumen).*—Normally the contents are fluid, and at intervals these attain sufficient bulk to excite by local pressure a peristaltic wave. When, however, any mass is present within the intestines of sufficient bulk to render its passage a matter of increased mechanical difficulty the vigorous peristaltic waves endeavor to drive the foreign body downwards. Tumors projecting into lumen, but attached to the bowel wall, induce colic by the same mechanism, invagination being only prevented by the anchorage of the mesentery, the resulting tension on which produces colicky pain with each similar effect.

The loosely attached intestinal mucosa is peculiarly liable to hyperaemia, congestion and swelling under the influence of any irritant. Such swelling of the mucous membrane not only projects into, but may also close the lumen of the gut, particularly during the passage of a rhythmic wave; and the resulting effort to drive the

swollen mucosa down the lumen, produces colicky pain in the same manner.

Congestion and swelling of the lymphoid tissue of the intestine is similarly one of the causes of colic, particularly in the lower ileum.

Marked swelling of Peyer's patches may encroach on, or even nearly obliterate, the lumen of the lower ileum, and the peristaltic waves attempt to drive the swelling into and down the intestinal lumen. The length, rigidity or elasticity of the attached mesentery is the determining factor in the result; the short, rigid mesentery will prevent inversion or intussusception, but colicky pain is excited with each peristaltic wave; the long elastic mesentery (common to many infants and young children) provides insufficient anchorage and intussusception results.

The inhibition of function by inflammation or exudation renders the inert area of the intestine incapable of responding to the ordinary mechanism of contraction and inhibition characteristic of peristalsis. On the arrival of a peristaltic contraction at the inert area the latter fails to respond to the inhibitory stimulus, and is therefore forced with the intestinal contents into the lumen of the normally inhibited segment below. A resulting invagination is prevented by the anchorage of the mesentery, but the traction exerted on the latter induces pain whose characteristic feature, is a complete absence except during peristalsis.

In intussusception, as in simple colic, pain and (before the onset of distention) discomfort are conspicuously absent except during peristalsis, and children often sleep quietly in the intervals. This feature is not so evident when intestinal distention has supervened, but if the intestinal wall itself is sensitive to distention, it is curious that such gross distention of the bowel wall as obtained in the intussusciens should so far be innocent of any different impulses as to permit of peaceful sleep. This together with the absence of tenderness and cutaneous hyperesthesia, constitutes strong evidence of insensibility of intestinal wall to every stimulus.

A full understanding of the significance of obscure intestinal colic depends on an appreciation of the fact that the bowel itself is insensitive; that colicky pain arises from and is referred to the mesentery; and that the mechanism of colic consists in the natural attempt of the bowel to drive onwards a diseased or inert area, thereby inducing an abnormal tension on the associated mesentery.



POATE, H. R. G.: **Bone Grafts.** *Medical Journal Australia*, 1922, i, 209.

Autogenous bone grafts are practically always successful with proper aseptic precautions and correct technic. Hemogenous grafts encounter some uncertainty, which Lexer has shown are due to action of foreign proteins, which vary most with difference in race, less with distant relatives, and least with those of one family. Heterogenous grafts are seldom successful, and it is a surgical error to use them.

Kausch gives the comparative values of the many preparations of bone and allied substances in the following order of importance:

- (1) Peduncleated soft parts with periosteum-covered bone flap.
- (2) Free transplanted periosteum-covered auto-plastic bone.
- (3) Free transplanted periosteum-covered homoplastic bone.
- (4) Fresh boiled bone.
- (5) Fresh preserved bone.
- (6) Cadaver or foetal bone, obtained under sterile conditions.
- (7) The same bone boiled.
- (8) Ivory.
- (9) Foreign bodies, such as metal.
- (10) Fresh animal bone, living or boiled.

The first three materials are the only ones now permissible, and these may be inserted with safety or certainty of success in a bed of periosteum.

*Details essential for success.*—Best results are obtained by autogenous graft, including periosteum, compact bone, and endosteum, and which is at once placed into the bed prepared for it, so that exact coaptation of each of these layers is obtained. The next point is that there be firm fixation in this position. The more rapid and extensive the vascularity of the graft, the less the amount of cellular death in it. All cellular death has to be replaced. This process may go on for 6 to 8 weeks. The better the preparation of the bed with soft tissues and covering layers, the more certain is the success of the graft.

*Intramedullary Pegs.*—This procedure is of very little value as the peg is too weak to act as an efficient splint for long, and the process of absorption runs out over a long time, causing fracture at slightest strain.

*Contraindications.*—Any severe sepsis causes necrosis of the whole graft; while slight degree of sepsis injures osteogenesis and delays union. The wound should be completely healed for at least 9 months and all heavy scar tissue should be excised 2 or 3 months before the bone is touched. The presence of a sinus or infecting focus is a direct contraindication.

*Preparation of the graft.*—The author favors a single-bladed saw for cutting the graft and shaping the bed. There should be a stream of saline solution constantly flowing at the contact point of saw and bone, so as to minimize the mechanical injuries and over-heating of the tissues; a slow revolution is best and more easily controlled. The sliding graft from the fractured area which could not develop union is unsuitable; likewise bone dust has few, if any live osteoblasts. In grafting the skull, the dura mater should be freed from the scalp and bony margin of the defect, while the fascia lata should be inserted between the dura and the graft; it is best to use a rib, which should be split, laying the raw medullary surface against the fascia lata, while the scalp is sutured over the periosteum. The crest of the ilium is of use in the skull or jaw work, but with the rib fails where stronger bone is required, and should not be used in one of the long bones of the limbs. This should be supplied from the tibia in the distal rather than the proximal half, leaving out the tibial crest. The width of the graft depends upon the width of the bed, yet must be wide enough in the large bones to take considerable amount of strains (10 to 15 millimeters).

*Fixation of the graft.*—It should be cut so as to fit firmly and snugly into its bed; efficient external splinting by plaster is all that is required in addition, although the author often uses two strands of kangaroo tendon around the whole thickness of bone and graft. He does not advise any other foreign substance.

*After-treatment.*—Complete immobilization must be secured by plaster, with a window cut to allow inspection of the wound, dressing, and removal of skin sutures. Then a light splint may be applied, and light massage be used; later active movements and exercises, until firm bony union is shown by x-rays. Four to six months should pass before full use of the limb is allowed.



FULLERTON, W. D.: *The Requisites of Modern Obstetrics and the Professional, Social and Moral Obligations of the Present Day Obstetricians.* *Ohio State Medical Journal*, 1922, xviii, 117-121.

The pregnant woman is in the prime of life; she has reached her greatest economic value and is most essential at this time to her family and community. Her risks of life and health are, at this time, increased. She should have the highest degree of skilled care of her existence. Under present conditions, more than fifteen thousand women die annually in the United States in the process of reproduction. Almost half of this terrible casualty list die from infection at the time of delivery. Almost every woman feels, at least during some part of her pregnancy that she will not survive delivery. Perhaps there is some justification of this intuitive fear. The mortality and morbidity of labor is entirely too great, and we must with aid of every faculty we possess or may acquire, improve present conditions. The greatest common risk that any of us have ever run, has been the danger of being born. Early in pregnancy the patient should have a complete and careful physical examination with special reference to heart, lungs, kidneys and blood. With abnormalities of these organs, the obstetrician must assume a tremendous responsibility in advising women who seek his advice or come under his observation before or after conception. No tuberculous woman should bear children. If pregnancy is well advanced, it may be continued in the interest of the child, though we recognize with what detriment to the mother. About one month before the calculated date of delivery, the patient should have another thorough physical examination with special reference to the position and presentation of the child and the pelvic measurements.

WYLDER, M. K.: *Some Newer Ideas on Treatment of Pellagra with Report of Two Cases.* *Southwestern Medicine*, 1922, vi, 103.

The author considers there is no doubt that this disease is caused by unsanitary conditions and either a poor or eccentric diet.

He used in treatment, the part of the corn that is not used for the meal, usually spoken of around the mill as "corn chop" which contains the husk and germ of the grain. "I was able to get splendid

co-operation from the family, they went to the mill and got just this part of the grain and used it for making bread which should be cooked with a very low heat and also without the use of baking powder or baking soda, as it is thought these alkalies also destroy the vitamin."

The case was a very severe one. She used this bread and a porridge made from the same meal and had her take as much as she could eat. With no other medication except 4 cakes of yeast a day, in 2 weeks was vastly improved, was taking normal diet, without nausea or diarrhea and hands were practically healed.

The second case did not respond to the same treatment, though explanation of this line of treatment seems so reasonable and so logical that the author is going to give it further trial.

**HAMMOND, F. C.: Carcinoma of the Cervix Uteri in the Nulliparous Women.** *New York Medical Journal*, 1922, cxvi, p. 14.

It still remains true that practically nothing is known of the specific cause of carcinoma. Of the many theories that have been advanced, none has been proved. The following statements are frequently seen in the text books and the literature; cancer of the cervix is rarely found in women who have not been pregnant, or upon whom some operation upon the cervix has not been performed; lower classes are more susceptible than higher; more frequent among the white than the colored women; the traumatism of coition is a factor to be considered; invariably a history may be obtained of a miscarriage, or possibly the expulsion of a fibroid tumor. Cases have been cited illustrative of these etiological factors. Of the nine cases herewith reported (five patients were seen during the past year) five were married (one of whom became pregnant, associated with the malignancy); of the unmarried, in two the hymen was intact, in another the hymen was ruptured and patient admitted coition having taken place, while in the other the hymen was ruptured but patient denied coition having taken place. Eight are white women and one colored. The ages are twenty-nine, thirty-four, thirty-six, thirty-nine, forty-nine, fifty (two), fifty-five and sixty. In none was there obtainable a history of (1) miscarriage, (2) any operations upon the cervix (except in one case), (3) nor the expulsion of a fibroid tumor.



In other words, in 5 of the cases the only possible source of trauma was coition; in 2 the hymen was intact, and in no way can trauma be considered an etiological factor. Dr. Thomas Addis Emmet first observed the relatively frequent development of cancer upon the lacerated cervix, and the almost total absence of it from the nulliparous cervix. Howard A. Kelly states that he has seen but 3 cases of cervical cancer in nulliparæ, and in one of these the cervix had been forcibly dilated. Kelly further states that "in advance of the local examination the fact that the patient is a nullipara is always strong presumptive proof against cancer of the cervix uteri". In regard to this latter statement, in view of the cases herewith reported, and others recorded from time to time, the examiner must not be influenced by the age or social status of the woman; when making a pelvic examination, the patient must be approached with the firm determination of making a positive diagnosis. The Middlesex Hospital, England, published a series of cases of cancer uteri, showing that 6 per cent of the cases occurred in sterile women. Possibly it would be safe to say that about 3 to 4 per cent of the cases of carcinoma uteri occur in nulliparous women.

**WEINBERG, M.:** Tumors of the Urinary Bladder. *Journal of the South Carolina Medical Association*, 1922, xvii, 137.

Bladder tumors are epithelial in origin in 90 per cent of cases; usually papilloma or carcinoma. Of 100,000 deaths from cancer each year in the U. S., 500 are from cancer of the bladder, showing that they are not rare.

*Treatment.*—This has been very discouraging up to 1910, when Berr introduced high frequency (fulguration) through the cystoscope. This treatment fills the bill for about 50 per cent of them, especially for all benign and for some of the malignant; but it is never successful for the malignant papillomata or any other type of tumor which has invaded the bladder wall, and failure to yield to this treatment is proof of its malignancy. Geraghty has found that radium is very useful, but not so with other observers: Judd uses it in inoperable cases. For the cancer surgery must be employed unless it is inoperable. Within the past few years advances have been made in the technic of controlling implants, yet the results are

far from brilliant; there is an immediate mortality of about 10 per cent.

*Prognosis.*—Of those coming to autopsy at the Johns Hopkins Hospital, in a series of 27, but 3 showed metastases, so that the causes of death is more from intercurrent diseases, loss of blood, renal insufficiency and infection; there may be obstruction at the ureteral orifice from the tumor.

FRAGOMELE, A.: **Contribution to the Study of Syphilis of the Stomach** (Contributo allo studio della sifilide dello stomaco). *Gazzetta Medica Napoletana*, 1922, v, 141.

The patients stomach represented a pillar, which was hard and nodular and simulating neoplasm not far from the xyphoid process. We should not have thought of syphilitic lesion if the Wassermann had not been positive. Mercurial treatment later on was a complete success. Family and personal history were negative. Debuc and Einhorn have reported cases of epigastric syphilis resembling tumors. All symptoms of gastric carcinoma were present, including rapid emaciation.

In this type of gastric syphilis there is pain, gastric disturbance, hematemesis with coffee ground sediment, and tumor. An ulcerous gumma must be suspected where there is a tumor which is not tender to touch, which is easily movable, develops slowly and causes stenosis. One must not, however, count too much on these signs. There is a very great variability in the reports of the hydrochloric acid contents. Einhorn describes 2 cases of syphilitic pyloric stenosis, where lactic acid was present, and where a large tumor with nodular surface appeared at the pylorus. Kohn observed 2 cases of syphilitic tumor of the stomach, one of them had had several abortions. Specific treatment was effective. These cases must be kept in mind where operative indication is discussed, or where cases are inoperable. One case was reported as having a negative Wassermann. On opening the abdomen, an inoperable carcinoma was found. It was located at the pylorus. After the attempt, antisymphilitic treatment cured the case. Pain and vomiting may be completely subdued by mercurial treatment per mouth. Bensaude and Rivet, in 1916, observed two syphilitic tumors of the stomach, in whom the general state was



very bad. There was infiltration of the pylorus and hematemesis. The tumor has existed for some years, and all disturbances disappeared within a short time after specific treatment. Agemas and Lacapere, in *Paris médicale*, 1919, published three cases of epigastric tumors, with positive Wassermann reaction. The functional symptoms differed. Only in one were tertiary syphilitic symptoms demonstrable on the skin. All were completely cured by specific treatment. Sometimes the ulcers will appear like small neoplasms. Often white scars form. In all cases the tumor is found at the pyloric region. It involves the mucus, the muscular, and the serous layers, and the ground of the ulcer is granular. Round cells and irregular, sometimes fusiform cells are seen with large transparent nuclei, like a chromatic layer. Elastic and connective tissue fibers are interspersed, and embryonal cells.

In the author's patient there was aside from functional disorder, a structural change of the stomach. It was enlarged and the lower border extended to the umbilicus. There was a gastrectasy. The gastric dilatation in syphilis may have various causes, either stenosing gumma or cicatricial retraction of the ulcer. Generally the stenosis is pyloric. Actually pyloric stenosis may accompany any type of syphilitic lesion in this region. Sometimes the stenosis will seem benign and slow in its development, sometimes it will take a course similar to that in cancer. The surgeon will be able to determine the nature of the disease by the histological findings. In the author's case there is evidently a gumma of the pylorus. After the administration of mercury and iodid, the patient did not vomit any more. Hayem, in *Presse médicale*, February, 1905, reports a case of syphilitic stenosis of the pylorus, where pylorotomy was performed, but the nature of the tumor was determined only by histological examination. When given specific treatment he recovered entirely. Hemmeter and Stokes diagnosed a case of two years' duration with cachexia as pyloric stenosis, and when surgical intervention was made, found a hard mass at the large curvature which they considered carcinomatous. Bousaude and Rivet cured a patient with specific treatment, where pyloric stenosis simulated carcinoma.

Cardiac stenosis is very rare. Only a few cases have been reported. Derthier found but one. He was not sure of the diagnosis because the report was based on clinical observation only. Bousaude and Rivet reported a case cured by specific treatment.

Weichselbaum describes a star-shaped scar-like thickening which was white and a little depressed, in a stomach containing distinctly syphilitic ulcers. Drozda at autopsy of a syphilitic who had died of hematemesis, and had suffered from severe gastric symptoms found a star-shaped lesion of this kind. There were also syphilitic conditions found in the spleen and pancreas. Biloculated stomachs, which show syphilitic cicatrization and syphilitic ulcers have been found by anatomists and this type therefore has been considered syphilitic by Rudnew, Stolper, Lafleur. Leven and Barret found a biloculated stomach in a woman who suffered from severe anemia and emaciation, who vomited and had violent gastric pain, and who completely recovered under the influence of antisyphilitic treatment. Lafleur, in 1903, in the course of an operation, found a calcified gumma in a case of stenosis near the border of the spleen. Boclere and Bensaude report a case of severe gastric disturbance emaciation, and cachexia, which was diagnosed as carcinoma. Gastric juice showed hypopepsia, traces of blood, and the roentgenogram showed bilocular stomach. They decided to try specific treatment before operating, and the patient completely recovered so that only a very slight trace of biloculation was seen in the radiogram.

KREUTZMAN, H. A. R.: **The Treatment of Hunner's Ulcer of the Bladder by Fulguration.** *California State Journal of Medicine*, 1922, xx, 128.

Hunner's ulcer has a pathological picture of chronic inflammation of all coats of the bladder. Symptoms are pain of a sharp, stabbing character, may be referred to the rectum, to the perineum, or even the one hip; there is strangury and frequent urination. Bladder walls are thickened and contracted, and capacity greatly reduced. Bumpus experimentally produced this bladder lesion by intravenous injection with pyogenic organisms, yet the bladder urine is often sterile to cultures, and the patients have no history of infection nor any demonstrable focus of infection. Symptoms may be of long duration. Cystoscopy, with water cystoscopes, is done only under general anesthetic. There is no history of hematuria, yet there are repeatedly found red cells and leukocytes in the urine.

Cystoscopic examination shows single or multiple ulcers, chiefly



located at the sides or the vault, never in the region of the trigone. When bladder is dilated beyond its ordinary capacity, there is a fine stream of blood seen flowing from the ulcer.

Treatment recommended by all authors as the only treatment is excision of the diseased parts of the bladder. The author, in the case cited, treated a case with such ulceration with fulguration, controlling the pain with morphin. This fulguration was repeated two weeks later. The result was that in less than a month after second treatment symptoms were entirely gone.

The author concludes that fulguration under an anesthetic should be done before the more severe operation of resection of the bladder is attempted.

**WARLOW, M. A.: Ethmoiditis and Sphenoiditis in Relation to Eye Disturbance; Report of Three Cases.** *The Laryngoscope*, 1922, xxxii, 623.

Sluder reported cases which at no time had pus in the nose, and trans-illumination and x-ray showed no clouding of the sinuses. These were cases of hyperplastic sphenoiditis and ethmoiditis, and operations were necessary. He proved that cocain readily passes from the sphenoid sinus to the nerve trunks.

In cases of hyperplastic ethmoiditis and sphenoiditis, the process is usually bilateral; however, the symptoms may be more marked on one side than on the other, due to a deflected septum.

The author reports 3 cases, 1 of which had suffered from headache three years with pain in the occipital region; later the eye-sight failed. Examination showed no pus in the nasal passages, but sphenoid region covered by obstruction. Right optic nerve was more affected than the left, showing a decided neuritis. Operation included a submucous resection, removal of both middle turbinata, exenteration of both ethmoidal cells, and opening of both sphenoid sinuses. It is done under local anesthetic, using 4 per cent cocain and adrenalin.

*Results.*—One week after operation the right field increased to nearly 20° in the upper half and to 10° in the lower; left increased to 20° in all directions. Vision also had increased. Her headaches, occipital pain, and distress in her eyes gradually disappeared.

Relief following opening of sinuses in all cases was remarkable; one case was cured by intranasal operation, which entirely cured frontal and occipital headaches, and greatly improved the vision; another of double suppurative ethmoidal and sphenoidal sinusitis, with extensive exophthalmos, was very much relieved, although not entirely normal.

HARRIS, W. H., AND FRIEDRICH, A.: **Peri-arteritis Nodosa with a Classification of the Pathology.** *The Journal of Medical Research*, July, 1922, xliii, p. 285.

The authors, after a review of the 52 reported instances of peri-arteritis nodosa in the literature, state that the pathological picture (microscopic and macroscopic) presents a definite entity and forms the basis for diagnosis. The vessels involved are the smaller type vessels in practically all parts of the body. Most common are the coronaries, branches of renals, smaller divisions of the celiac axis, mesenteric and those of the extremities and subcutaneous tissues. Consequently a disease of such varied localization must present a clinical picture protean in aspect. With the exception of syphilis and arteriosclerosis of these same generalized structures, there is no other disease occasioning such highly destructive tissue change, so generally distributed. The distinctive symptoms consequently will be referred to the areas most intensely involved. As there is nothing specific or pathognomonic in these features, peri-arteritis nodosa is never considered and some other clinical diagnosis is made ante-mortem, although exceptions have occurred when subcutaneous vessels have presented nodules accompanied with enough local disturbance to warrant their extirpation. Irregular temperature and leukocytosis are found as quite constant factors and an evidence of a low grade septicemia is suggested. Pathologically the disease presents an exudative lesion of the periadventitia, the adventitia, the media and occasionally the intima of the smaller sized arteries. Necrosis especially occurs of the media, occasioning the production of true and false aneurysms, with marked thrombosis or hemorrhagic extravasation. Secondary proliferative and reparative processes may ensue. The so-called nodules are formed by multiple thrombosed aneurysms, but microscopic study only confirms the diagnosis.



The authors by their experiments were able to reproduce the lesions as seen in the human, in the rabbit by an emulsion prepared from nodular lesions of a human case. The best lesions were produced by a Berkefeld filtrate of a prepared emulsion of certain organs of one of the rabbits previously inoculated with human material, suggesting further that the causative factor is a filterable microorganism.

L. B. ECKERSON.

SOSNOWSKI, J.: **Syphilis of the Uterus.** *Journal of the South Carolina Medical Association*, 1922, xviii, 12.

*Syphilitic Lesions of the Uterus.*—First, the initial sore on the cervix, which is seen not rarely; second, uterine discharge as leucorrhea and metorrhagia, seen during the eruptive stage of the disease; third, the engorged or wet uterus seen in early part of the later phases of the disease; fourth, the contracted or dry uterus, seen in the later stages; and fifth the peri-uterine adhesions seen in some cases toward the end of the wet hyperplastic stage.

*Pathology.*—After the primary sore the pathology consists of an endo and periarteritis with cellular proliferations; all organs with a good blood supply show changes due to these vascular disturbances. Likewise, lungs, liver, kidneys, stomach, intestines, brain and other vascular structures suffer.

*Diagnosis.*—The chancre of the cervix has such characteristic appearance, that the author passes over it, but states that in this stage there is usually some sero-sanguinous leukorrhea, often having a peculiar acrid odor; also some pain in the back. In many cases it occurs in young women and inspection shows cervix large ulcerated, with sometimes a diphtheroid looking membrane in the ulcer.

In the eruptive stage with fever and diarrhea, there is leukorrhea of rather pronounced type but varying character—mainly serosanguinous or seropurulent. After this stage passes, the discharge persists, but may be thinner and more glairy.

Then the vascular changes appear anywhere from six weeks to several months after the secondary symptoms. The uterus is hyperplastic, large and moist; may be three times normal size, usually about twice normal. When examined, uterus is soft, equally enlarged, with no irregularities; apt to be retroflexed and difficult to place in

position. Symptoms are those of constipation and pain in the back; may be painful defecation; usually increased menses, both as to time and quantity. Between menses there is a serosanguinous leukorrhea. Uterus is easily movable, although there may be cob-webby adhesions between uterus and surrounding organs especially in cases of intense uterine congestion.

After about three months the stage of hyperplasia subsides, then occurs round cell infiltration and contraction, so that the uterus is reduced to about  $2/3$  or  $3/4$  its normal size. Then with the obliterating end-arteritis the uterus becomes dry, hard and small although it is usually freely movable and in a normal position. Symptoms are a pain in the back, sometimes, of a vague character, often a small amount of thin, glairy leucorrhea. The vagina is pale, the cervix small and hard. The patient is usually thin and the uterus may be easily palpated. The author gives the proportion of the hyperplastic to the hypoplastic cases of about one to five. Pregnancy is less and less apt to occur as the hypoplastic stage advances.

This data is made on the study of a series of 87 cases.

NELKEN, A.: **The Problem of Chronic Infection of the Prostate.**  
*Southern Medical Journal*, 1922, xv, 730.

*Diagnosis.*—Pus in the fluid expressed from the prostate is the only sure index of infection of the gland. This should be done after thorough irrigation of the urethra. Even then there is some difficulty in avoiding forcing secretion from the vesicles, ampulla and ejaculatory ducts, as well as from Cowper's glands.

*Etiology.*—The prostate is involved in 85 per cent of all cases of gonorrhea, and in 50 per cent of all non-specific infections of the urethra. Analysis of 400 reports showed pus present but no organism found in 168; diphtheroids in 76; bacillus coli in 45; staphylococcus in 39; staphylococcus and diphtheroids in 25; staphylococcus and bacillus coli in 19; bacillus coli and diphtheroids in 2; streptobacillus in 1; and gonococcus in 13.

The gonococcus may be differentiated from the pneumonococcus by a differential stain.

*Treatment.*—Hot rectal douching with a tube of Kemp type and the psychrophore allows prolonged application of heat without dis-



turbing the bowels. The author disagrees with others in that he believes that heat has little or no value in chronic infections of the gland. He has discarded the use of faradic and galvanic current, but he does use the injection of solutions into small prostatic abscesses through a ureteral catheter passed into the cavity through the cysto-urethroscope. Sounds and dilators are also of value. He has not obtained especially good results from vaccine either stock or autogenous. Radiotherapy may have a beneficial effect in chronic prostatic infections. He has used it in 7 cases recently.

Massage regularly applied has a curative value and many cases, incurable, are much ameliorated. He further advises that the treatment be discontinued at times, after prolonged treatment, to be taken up again when the symptoms seen to return.

He incises and drains prostatic abscesses that fail to rupture into the urethra. In many cases, however, nothing short of entire removal will cure the infection.

RABINOWITSCH, H.: A Few Practical Hints in Angina Pectoris. *New York Medical Journal*, 1922, cxv, 240.

*Diagnosis.*—Formerly angina pectoris was diagnosed by paroxysm of agonizing pain, accompanied by sensation of impending death. This describes but the severer forms of the disease. In the majority of the milder cases, there is an almost constant feeling of oppression in the chest, some dyspnea with slight precordial pain, and a sense of distress and uneasiness. These are commonly mistaken for gastric disorder. The milder symptoms are due to the varying degree of obstruction of the coronary arteries, interfering with the nutrition of the myocardium.

*Complications.*—There may be mitral stenosis, accompanying angina; likewise thrombosis, or pericarditis. More commonly are hypertrophy, myocardial diseases and frequently aortic insufficiency especially. General arteriosclerosis is rarely present and blood-pressure usually normal.

*Etiology.*—Not to be considered a disease of the aged; more especially of the middle aged; most fatal cases are in the fifties. More prevalent in men than in women. If found in women, it is usually a part of general arteriosclerosis. More frequently found in profes-

sional people, especially physicians. The majority of cases, according to the author, tobacco was responsible; alcohol, and to some degree coffee, are also factors. Lead, in cases of painters and printers, is often the cause. Red meats, by causing a general gouty condition, may be a cause. Other important factors are syphilis. Exciting causes of severe attacks are from (1) surrounding temperature being too hot or too cold; (2) improper food, over-loading the stomach, and constipation; (3) muscular effort, rapid movements, especially facing the wind; (4) mental emotions, worry, excitement, annoyance, etc.; (5) irrational or uncomfortable dressing.

*Treatment.*—Rest in bed, if possible; patient should have at least 10 hours sleep a day. Later moderate exercise is beneficial; walks twice a day, about an hour at a time, with a little rest after each half hour, walking should not be fast nor against a strong wind; breathing should be deep through the nose; clothing should be loose; no belts nor stiff, narrow collars, neither should the hat nor cap be tight nor heavy. Moderate climate, Florida in the winter time if the patient can afford it; otherwise should stay in-doors on very cold days. Room temperature should be moderate, not over-heated, dressing in the winter time should be warm, especially about head and neck; in summer, clothes light and comfortable.

*Diet.*—Avoid red meats, with exception of an occasional small piece of boiled meat, but no roast meat. Main diet should be vegetarian; plenty of vegetables and cooked fruits; plenty of cream and butter, but no other fats. Meals should be moderate in size. Hot liquids, in general, are believed to do good. Stomach and bowels should be kept in perfect condition.

*Medical Treatment.*—Epsom salts should be used if lead poisoning is suspected. In the mild form, potassium iodid for some time is recommended; occasionally digitalis may be necessary. In the severe forms, the usual medication was indicated.

Hygiene and dietetic measures are usually sufficient in the mild cases. The patient must abstain from tobacco and alcohol, live a quiet life, and avoid excitement of any kind, or worry and muscular exertion; coffee may be taken moderately.



BASS, C. C.: **Malaria Relapse Due to Improper Treatment.** *International Clinics*, 31st Series, J. B. Lippincott Co., Philadelphia, & London, v, 109.

"The standard treatment for malaria recommended by the National Malaria Committee is as follows:

For the acute attack 10 grains of quinin sulphate by mouth three times a day for a period of at least three or four days, to be followed by 10 grains every night before retiring for a period of eight weeks. For infected persons not having acute symptoms at the time only the eight weeks' treatment is required.

The proportionate doses for children are: Under 1 year, one-half grain; 1 year, 1 grain; 2 years, 2 grains; 3 and 4 years, 3 grains; 5, 6 and 7 years, 4 grains; 8, 9, and 10 years, 6 grains; 11, 12, 13, and 14 years, 8 grains; 15 years or older, 10 grains."

## SECTION ON LABORATORY AND RESEARCH

**WILLIAMS, C. S.:** **Some Observations on Blood Sugar and the Alleged Glycosuria Following Operative Procedures on the Thoracic Duct.** *The Journal of Laboratory and Clinical Medicine*, October, 1922, viii, No. 1, p. 11.

Practically no changes in the blood sugar level were observed following operative procedures on the thoracic duct (thoracic duct ligation or thoracic duct fistula).

Glycosuria did not develop in any of the animals in the experiments.

C. M. ANDERSON.

**HUDSON, W. A.:** **The Iodin Content of the Blood Following Thyroidectomy.** *The Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 469.

Observations recorded concerning the relation of iodine to the thyroid gland suggested the possibility that the thyroid might modify the iodine content of the blood. Using Kendall's method, the author first determined the iodine content of the blood of normal dogs kept under laboratory conditions and then removed the thyroids of these animals in order to determine whether the iodine content of the blood was changed. Seventeen dogs were employed in this study. It was found that after thyroidectomy the iodine content of the blood increased. The administration of fresh thyroid gland of sheep by mouth to the thyroidectomized dogs caused the iodine content of the blood to



fall to the normal pre-operative level when the thyroid feeding was discontinued the iodine content of the blood again increased. The possibility suggests itself that the thyroid influences the metabolism of iodine in much the same way that the pancreas controls the metabolism of glucose.

H. M. FEINBLATT.

CARREL, A.: **Growth-Promoting Function of Leukocytes.** *The Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 385.

We are as yet ignorant of the mechanisms which cause cells at rest in a growth-inhibiting medium, such as the humors of an old animal, to proliferate again, as they do in the cicatrization of wounds. It is known that certain substances contained in embryonic juice are endowed with the remarkable property of greatly activating the rate of cell proliferation *in vitro*. Possibly such growth-promoting substances must be supplied to adult tissues when they cicatrize or regenerate. One of the sources of these substances may be the leukocytes, which, remaining in the embryonic state of development during the entire life of the organism, probably contain the growth-activating substances characteristic of embryonic tissues. The purpose of the experiments described in this article was to study the value of this hypothesis by ascertaining whether leukocytes contain and secrete growth-promoting substances, and whether tissues and exudates in which they accumulate acquire the power of activating cell proliferation.

It was found that leukocyte extracts, like embryonic tissue juice, possess the power of increasing the rate of growth of fibroblasts *in vitro*, and that the leukocytes secrete substances *in vitro* which also promote cell multiplication. Leukocytes are capable of bringing growth-activating substances to tissue cells. The existence of mechanisms causing leukocytes to invade tissues in need of repair is certain. The initiation of healing seems to depend on the coming of the leukocytes to the wounded tissue. When they are missing, as happens when the wound is protected from all external irritation, cicatrization is greatly delayed. On the contrary, when staphylococci, turpentine, and other irritants are applied to the surface of the wound, granulations appear after less than 48 hours. These ir-

ritants, although different in nature, have the common characteristic of determining an inflammation of the tissues and the migration of leukocytes from the vessels to the surface of the wound. Possibly the white cells bring the substances which adult tissues require in order to cicatrize or regenerate. They would have the function of storing away the growth-promoting substances characteristic of embryonic tissues, and bringing them to the regions of the organism where they are needed.

H. M. FEINBLATT.

BURGE, W. E., AND LEICHSENRING, J. M.: **The Effect of Warm and Cold Weather on the Blood Catalase.** *The Journal of Laboratory and Clinical Medicine*, October, 1922, viii, No. 1, p. 33.

The blood catalase of Illinois rabbits is lowered in the summer when the weather is hottest and highest when the weather is coldest in the winter.

As the weather grows colder, passing from summer to fall and winter, the blood catalase gradually increases, and passing from winter to spring and summer when the weather is growing warmer, the blood catalase gradually decreases. The blood catalase of Louisiana rabbits in December is much lower than that of rabbits at the same time in the colder climate of Illinois. However, if the Louisiana rabbits are brought north to Illinois in the winter, the blood catalase rapidly increases. The increase in oxidation in warm blooded animals brought about by cold weather is attributed to an increase in catalase and the decrease in oxidation brought about by warm weather is attributed to a decrease in catalase.

C. M. ANDERSON.

CARREL, A., AND EBELING, A. H.: **Pure Cultures of Large Mononuclear Leukocytes.** *The Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 365.

Pure strains of mononuclear leukocytes were isolated from the blood of adult chickens and kept in active condition for nearly 3 months. The cultures were composed of large mononuclear leu-



kocytes which migrated and proliferated *in vitro* at a slower rate than fibroblasts. The cells had no tendency to form tissue, as do fibroblasts and epithelial cells. Under certain conditions, differentiation of the large mononuclears into cells assuming the appearance of fibroblasts took place. This phenomenon, together with the differentiation *in vitro* of lymphocytes into large mononuclears observed by Maximoff is a confirmation of the ideas of Renaut and his school, who consider the lymphocyte as the origin of all connective tissue cells. The activity of the large mononuclears was increased by embryonic tissue juice and inhibited by homologous serum.

H. M. FEINBLATT.

FISCHER, A.: **A Pure Strain of Cartilage Cells in Vitro.** *The Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 379.

A strain of cartilage cells, obtained from the pars cartilago sclerae of the eye of chick embryos, was cultivated *in vitro* for more than three months. Only on the free surface of the coagulum was the initial growth of the cartilage possible. The rate of growth of cartilage was slower than that of fibroblasts and epithelium. After cultivation on the surface of the coagulum, the cartilage cells would multiply even when embedded in the coagulum. But their growth was less extensive and uniform.

H. M. FEINBLATT.

TUNNICLIFF, R., AND MOODY, W. B.: **Experimental Measles by Inoculation of Monkeys, Guinea Pigs, and Rabbits with a Green-producing Diplococcus.** *The Journal of Infectious Diseases*, October, 1922, xxxi, No. 4, p. 382.

Monkeys, guinea pigs and rabbits are susceptible to measles when inoculated with the washings of the nose and throat of patients with measles. The same symptoms and lesions may be produced in these animals by the green-producing diplococci isolated from the blood and respiratory passages of human measles. Rabbits successfully inoculated with washings or the diplococcus show no symptoms when re-inoculated with fresh virus. Green-producing diplococci from the

blood and lung of rabbits, successfully inoculated with diplococci from measles, produce Koplik spots and exanthems when injected into other rabbits. Filtrates of the diplococcus cultures generally show abundant growth, but old cultures containing large forms sometimes multiply only after several days' incubation or on subculture into a favorable medium. While the experiments indicate that the reaction is due to the coccus itself and not to a separate virus carried by it, on account of the same symptoms being produced by cultures as late as the seventh generation and the absence of the reaction in rabbits injected with other bacteria, isolated from the same plate as the green-producing diplococci, it is possible that the diplococcus possesses the selective power of carrying the specific virus of measles.

M. M. BANOWITCH.

FISCHER, A.: **Cultures of Organized Tissues.** *Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 393.

Fragments of small intestine from a 21 day old chick embryo, cultivated in plasma and tissue juice, became completely surrounded with cylindrical epithelium. After a month's cultivation, the tissues composing the mass were normal. It would seem that the necessary food material was absorbed by the epithelium from the culture medium. The cultivation of complex tissues will facilitate the study of the interactions of the different cells under various conditions. In some experiments pure cultures of epithelial cells were grafted into such an "organism" without difficulty. The growth of malignant cells could be studied in the same way.

H. M. FEINBLATT.

KRUMBHAAR, E. B.: **Reticulosis. Increased Percentage of Reticulated Erythrocytes In the Peripheral Blood.** *The Journal of Laboratory and Clinical Medicine*, October, 1922, viii, No. 1, p. 11.

Erythrocytes revealing a more or less extensive reticulum (granulo-filamentous substance) by the methods of vital staining, may be conveniently designated "reticulocytes". The reticulum is probably of protoplasmic origin, and indicates an intermediate stage



between the erythroblast and the adult erythrocyte. A simple method for their recognition and estimation is described. The greater delicacy of the tests for these cells and the greater constancy and delicacy of their variations in the peripheral blood, makes them more valuable criteria of the functional activity of the bone marrow than the study of polychromatophilia or nucleated forms. In the blood of dogs made plethoric by repeated transfusions of blood, the reticulocytes diminished or disappeared entirely during the plethoric stage. With the occurrence of a hemolytic anemia, a reticulosis occurred, which in one instance reached 81 per cent. The average percentage of reticulocytes and their normal range in man and the common laboratory animals is given. The average curve of reticulosis during infancy is given, and the variations occurring in disease discussed.

C. M. ANDERSON.

BOOTS, R. H., AND CULLEN, G. E.: **The Hydrogen Ion Concentration of Joint Exudates in Rheumatic Fever and Other Forms of Arthritis.** *The Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 405.

A study was made of the hydrogen ion concentration of exudates aspirated from the inflamed joints of patients ill with rheumatic fever and certain other forms of arthritis in order (1) to compare the reactions of the exudates in these arthritic diseases, and (2) to determine whether an acidity occurs in the inflamed joints in acute rheumatic fever sufficient to permit the liberation of free salicylic acid following salicylate therapy. The hydrogen ion concentrations of the joint exudates from patients with acute rheumatic fever approximated the normal reaction of blood, varying from pH 7.27 to 7.42. Exudates from patients with arthritis of undetermined origin varied in pH from 7.33 to 7.47. The pH of a joint effusion occurring in a patient with myocardial insufficiency was 7.34. Bacteriologically, all of these fluids were sterile by ordinary means of cultivation. As Hanzlik has previously concluded from direct examinations that free salicylic acid could not be demonstrated in the joint exudates of acute rheumatic fever, and the present findings indicate that free acid could not possibly exist, it is evident that the local antiphlogistic action of the drug is due to some other factor than free salicylic acid.

An exudate aspirated from a knee infected with *Staphylococcus aureus* had a pH of 6.69, while that from a patient having an arthritis due to *Streptococcus hemolyticus* was also acid, having a pH of 6.19. The fluids containing bacteria gave a slightly acid reaction; the sterile fluids gave a slightly alkaline reaction. These findings are in accord with the results obtained by other workers, which show that when bacteria such as hemolytic streptococci, staphylococci, pneumococci, meningococci, or tubercle bacilli are present in an exudate in sufficient numbers to be detected, either by cultural or microscopic examination, the reaction of that exudate is always more acid than blood.

Since a definitely acid medium is necessary for the liberation of free salicylic acid and since all of the joint fluids from patients with acute rheumatic fever were slightly alkaline, no free salicylic acid could possibly exist in such joint fluids following the administration of salicylates.

H. M. FEINBLATT.

CARREL, A., AND EBELING, A. H.: **Action of Shaken Serum on Homologous Fibroblasts.** *Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 399.

The activity of homologous fibroblasts decreases after the serum composing their medium has been heated at 56° and 70° C., while under the same cultural conditions, the rate of migration of heterologous fibroblasts increases. The better growth of heterologous tissue in heated serum is probably due to the destruction of alexin; but the cause of the decreased activity of homologous tissue is still unknown. The purpose of the experiments described in this article was to study the effect of serum inactivated by shaking on the growth of fibroblasts.

Serum was obtained from plasma of chickens about one year old, sealed in Pyrex tubes, and shaken at low speed for periods varying from 1 to 8 hours. This serum showed increased inhibition for chicken fibroblasts. Dog serum similarly inactivated showed decreased inhibition for chicken fibroblasts.

H. M. FEINBLATT.



VAN LEEUWEN, W. S., BIEN, Z., AND VAREKAMP, H.: On Alimentary Leukocytosis in its Relation to the "Crise Hémoclasique" of Widal. *The Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 415.

During the last few years Widal and his co-workers have shown that under certain conditions a characteristic complex occurs in the blood, a complex denoted by Widal as "*crise hémoclasique*" or "*crise colloïdoclasique*."

If a normal animal is injected intravenously with a certain dose of peptone, the blood-pressure will fall, the clotting time of the blood will be decreased, the number of leukocytes in the peripheral blood stream will be decreased, and the refractive index of the serum will change. Widal showed that in the normal dog after a protein meal higher cleavage products of protein, i. e., peptones or albumoses, are absorbed from the intestine, and the occurrence of these cleavage products in the portal blood stream can be demonstrated by physiological means. In normal animals these cleavage products cannot enter the general blood stream, since they are fixed in the liver. If, however, the liver cells are damaged, they lose part of their fixing power, and albumoses or peptones will escape into the general blood stream and will produce changes in clotting time, in refractive index, in leukocyte count, and so forth, and thus a *crise hémoclasique* will ensue. Such a *crise hémoclasique* can also be produced in other ways; viz., by injection of a specific protein into an individual sensitized to that protein (anaphylactic shock), by injections of certain colloids or of drugs, such as salvarsan, to predisposed individuals, etc. Widal maintained that in cases of hypersensitiveness to certain foodstuffs in man the ingestion of these foodstuffs will produce a *crise colloïdoclasique* even in the absence of any demonstrable damage of the liver cells. The interrelation of symptoms of hypersensitiveness and of those of a *crise hémoclasique* is, according to Widal, so close that in doubtful cases the finding of a *crise hémoclasique* after ingestion of a certain foodstuff will give an indication as to the nature of the causative agent of the symptoms of hypersensitiveness (migraine, asthma, hay-fever, etc.) and thus clear up the diagnosis. Since, according to Widal, the most prominent feature of the *crise hémoclasique* is the decrease in leukocyte count within 20 to 40 minutes after ingestion of the foodstuff or drug, in many cases the diag-

nosis of hypersensitiveness can be made from a series of leukocyte counts at intervals of 20 minutes before and after the ingestion of a certain foodstuff.

The present paper represents a study of the influence of various ingested proteins on the leukocyte counts in a number of asthmatic patients and of normal individuals. Following Widal's instructions, white counts were made in the morning before any food had been taken, then the patient took the food to be tested, and during the next two hours counts were made at intervals of 20 minutes.

In nearly every case of asthma there was found a *crise hémoclasique* after ingestion of some test meal, but every case gave different results. Some reacted to milk only, others to meat, or butter, eggs, or rice only; still others reacted to butter and rice or to meat and eggs. In fact nearly every possible combination was found. The fact that a fall of leukocyte count was found after ingestion of butter as well as after ingestion of protein showed that Widal's explanation as to the origin of the *crise* certainly could not hold good in the present cases, since it is not very likely that ingestion of butter would cause an increase after 20 minutes in the albumose content of the portal blood stream. Widal himself found the same phenomenon after the ingestion of small amounts of glucose in diabetics.

As a rule, a sharp fall in the leukocyte curve occurred within one or two minutes after the meal. This short interval of time excludes any possibility that the fall has a connection with the absorption of cleavage products of the food administered; very likely it is caused by some reflex action from the alimentary canal and is probably only an expression of a change in the distribution of the white cells. This first sharp fall is accompanied by a similar fall in red blood-cells, the leukocytic formula is not changed, the blood-pressure also remains unchanged. Generally, after the initial drop, the curve would rise within 10 to 20 minutes, but often a second fall would follow 30 to 50 minutes after the meal. This might be followed by a slow rise in the curve (physiological leukocytosis).

Not infrequently the leukocyte curve after ingestion of food showed a form differing considerably from that described above. Counts of white cells made at intervals of 20 minutes in the same patient at different times but after ingestion of the same food showed very different leukocytic curves. Such counts did not give evidence of the *crise hémoclasique* and consequently could not be used



to identify the causative agent of cases of hypersensitiveness to food-stuffs or drugs. Whether such an identification can be obtained if instead of simply counting white cells the whole complex of symptoms originally described by Widal as characteristic for a *crise hémoclasique* is used, has not been studied by the present work.

H. M. FEINBLATT.

SMITH, T., AND LITTLE, R. B.: **Cow Serum as a Substitute for Colostrum in New-born Calves.** *The Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 453.

In a former communication it was shown that if colostrum be withheld from calves the greater number die within the first week as a result of the invasion and multiplication of intestinal bacteria, chiefly *Bacillus coli*, throughout the body. The rapid absorption into the blood of agglutinins towards *Bacillus abortus* ingested in the colostrum indicated that the immunity of the calves receiving colostrum is due to the protective antibodies which tend to accumulate in the colostrum up to the time of parturition.

In the experiments here reported, the serum of a normal lactating cow when injected into calves a few hours after birth saved only 2 out of 5 animals so treated. Serum added to the milk of the first two meals saved 3 out of 5. When the two methods were combined and the serum was both injected and fed, all 5 animals so treated survived as normal calves. Since the beginning of this investigation 12 out of 13 colostrum-fed calves have survived and only 4 out of 15 from which colostrum was withheld.

H. M. FEINBLATT.

HESS, A. F., UNGER, L. J., AND PAPPENHEIMER, A. M.: **Experimental Rickets in Rats. VII. The Prevention of Rickets by Sunlight, by the Rays of the Mercury Vapor Lamp, and by the Carbon Arc Lamp.** *The Journal of Experimental Medicine*, October, 1922, xxxvi, No. 4, p. 427.

It is now well established that infantile rickets can be prevented or cured by means of sunlight, or light from various artificial sources.

Recently it has been shown that light is able to exert a similar favorable influence upon the experimental rickets of rats. A large series of experiments is here reported showing the effects of sunlight and rays of different kinds under a great variety of conditions.

For all experiments young rats about 40 to 50 gm. in weight were used. They were kept in a darkened room at all times. After an interval of about 21 days they were radiographed for the appearance of rickets at the epiphyses of the knee joints, and were killed after a total period of 25 to 28 days. In almost every instance the bones were subjected to microscopic examination, and the final criterion as to the presence of rickets was the histological, rather than the radiographic picture. The animals were fed a standard rickets-producing diet, which was adequate in its calcium, but inadequate in its phosphorus content. This diet contained about 86 mgm. of phosphorus per 100 gm. of diet. The addition of about 75 mgm. of phosphorus to this diet is required to protect rats from rickets, so that the effect of sunlight may be stated to have been equivalent to about doubling the quota of phosphorus.

In the experiments, young rats on a diet low in phosphorus were protected from rickets by irradiations with sunlight for about 15 minutes daily. In the winter months, however, this degree of light was found insufficient. No doubt this is to be ascribed to the comparative lack of ultra-violet radiation furnished by the sun in the temperate zone in this season of the year, and is a factor to be considered in employing heliotherapy in infantile rickets. The effective rays of the sun, in the intensities studied, did not penetrate window glass. They manifested some protective value after reflection from a smooth white surface.

As the rays from the mercury vapor lamp have been used successfully in infantile rickets, their effect upon experimental rats was studied. The rays of this lamp are referred to sometimes as artificial sunlight, but differ markedly from those of the sun in that their spectrum is linear and not continuous, and they do not extend so far in the region of the infra-red but much further in the region of the ultra-violet. It was found that irradiation of a few minutes with the rays of the mercury vapor lamp sufficed to protect rats against rickets.

In view of the fact that the spectrum of the carbon arc lamp resembles sunlight more closely than that of the mercury vapor lamp,



it seemed as if this source of light might be of value in rickets. This was found to be the case both in experimental and in infantile rickets. By means of this therapeutic agent rickets in infants can be readily cured, and the cure is accompanied by a surprisingly rapid augmentation of the inorganic phosphate of the blood. In a large series of young rats it was found that daily exposures of 3 minutes, at a distance of 3 feet, regularly prevented the occurrence of rickets, and that 2-minute exposures sufficed frequently under these conditions. When the animals were irradiated only every other day, slight rickets developed. A standard protective dose of radiation with the mercury vapor lamp and the carbon arc lamp could be formulated for rats on a standard rickets-producing diet.

Light was able to prevent the occurrence of rickets in rats fed a rickets-producing diet characterized either by a low phosphorus and a high calcium content, or a high phosphorus and a low calcium content. Moderate variations in temperature did not alter the effective action of light rays. Pigmentation of the skin markedly lessened their effect, as demonstrated by the failure of a standard dose to protect black rats.

H. M. FEINBLATT.

DYKE, S. C.: On Blood Grouping and Its Clinical Applications With a Simple Method of Group Determination. *Lancet*, 1922, ccl, 579.

The allotting of blood from humans to its appropriate group is of practical value, mainly in blood transfusion. In some few instances, blood transfusion was detrimental. Death sometimes followed immediately upon the introduction of fresh blood from healthy subjects, or rigors, hemaglobinuria, loss of consciousness and shock, endangered the patients. It was evident that some human bloods were incompatible with others. This was the case where the serum of the recipient was capable of agglutinating the red cells of the donor. Moss, von Dungern and Hirschfeld, Jansky, and Landsteiner found that agglutination of red cells might be brought about by serum from perfectly healthy, normal individuals. It finally became possible to place all human bloods into four groups, according to the manner in which their red cells and serums interacted with each other. They postulated two agglutinable substances in the red

corpuscles and two corresponding agglutinins in the serums. They denominated the first two *A* and *B*, and the agglutinins *a* and *b*. They postulated that the agglutinin capable of acting upon the agglutinable body, present in any given red cell, will never be normally present in the serum of the blood containing that red cell, and conversely, that the agglutinin opposite in sign to that of the red cells in the blood will always be present in the serum of that blood.

<i>Group</i>	<i>Serum</i>	<i>Corpuscles</i>
I	Agglutinin nil	Agglutinable factor <i>A</i> and <i>B</i>
II	Agglutinin <i>b</i>	Agglutinable factor <i>A</i>
III	Agglutinin <i>a</i>	Agglutinable factor <i>B</i>
IV	Agglutinin <i>a</i> and <i>b</i>	Agglutinable factor nil.

The table shows that since the corpuscles of Group IV, blood contained neither agglutinable factor *A* nor *B*, they are inagglutinable by all serums. They can be administered to anyone of no matter what blood group. They comprise the "universal donors." The serum of Group IV individuals, however, contains both agglutinins *a* and *b*, and therefore members of Group IV can receive blood only from within their own group. The corpuscles of members of Group one, contained both the agglutinable factors, but agglutinins are absent from their serum. Since their serum can agglutinate no red cells they can receive blood from members of any of the groups. They are the "universal recipients", but can only act as donors to members of their own group. The members of Groups II and III can act as donors only within their own group or Group I, and can receive blood only from members of their own group or Group IV.

The simplest technic is to take a glass microscope slide, divide it into two halves by a line drawn with a grease pencil or a diamond; mark one half II, and the other half III; let a small drop of blood fall from the ear of the person to be grouped on each half. Place one large drop of known Group II serum close to the drop of blood on the half slide marked II, and mix blood and serum with a match stick. The same is done using known Group III, using a new match stick. The slide must be agitated occasionally. Agglutination will be distinctly marked if present.

Here follow several other methods:

*"Medico-Legal Aspect of Blood Group Determination.*—The determination of the blood groups may also come to have applications in legal medicine in two ways: firstly, in the narrowing down of the



individuals from whom a given sample of blood may have come; and, secondly, in the determination of paternity. As regards the first application, Schütze has shown that it is possible to determine the group of blood which has been dried for a long time. Blood-stains, even if proved to be human, on the clothing of a suspected murderer, if shown to be of a group to which his supposed victim did not belong, would serve as no evidence against him, while if the groups tallied, the evidence would be strengthened. In such cases also useful evidence might be obtained as to the truth of the asseveration so frequently made that the stain came from the suspected person himself. As regards paternity, it has been suggested by Hirschfeld and Hirschfeld, and confirmed by Learmouth, that the factors *A* and *B* of the corpuscles behave as dominants and are inherited according to Mendelian laws. Thus two persons of Group IV can beget nothing but Group IV children; two persons of Group II nothing but Group II or IV, and of Group III nothing but Group III or IV children. Exceptions in the children might be produced as evidence of non-paternity.

"Observations on the distribution of the different groups in the general population have been made by various authors; in Western Europe and America the incidence of the various groups is very much the same, but Hirschfeld and Hirschfeld have shown that the *B* factor increases in proportion with a resultant increase in the numbers of Group III, as the Orient is approached.

"For America (Baltimore) Moss gives the following proportions: Group I, 10 per cent; Group II, 40 per cent; Group III, 7 per cent; and Group IV, 43 per cent.

"Von Dungern and Hirschfeld found the distribution in Germany (Heidelberg) as follows: Group I, 6 per cent; Group II, 47 per cent; Group III, 11 per cent; and Group IV, 36 per cent.

"In this country (London) the observations of the writer on a small series of 75 persons gave the following distribution: Group I, 6.6 per cent; Group II, 40 per cent; Group III, 10.7 per cent; and Group IV, 42.7 per cent.

"It will be noted that in Western Europe and in America alike the incidence of Group IV individuals, the universal donors, is fortunately high."

OLIVER, S. F.: **The Effect of Bile Salts in the Urine on Routine Tests for Albumin.** *The Journal of Laboratory and Clinical Medicine*, September, 1922, vii, No. 12, p. 743.

It is known that bile salts are precipitated from solution when treated with mineral acids and dilute acetic acid and that they can be redissolved on the addition of alkali. The usual reagents used in the common tests for albumin, such as nitric acid, hydrochloric acid and weak acetic acid, all bring about this change. In all cases where an increase in bile salts was noted in the urine, it was observed that the urine was cloudy and turbid, if the reaction of the mixture was acid. This turbidity was increased if acid were added to the mixture. Neutral or alkaline urines were found to be almost always clear. Roughly, this turbidity of acid urines was proportional to the bile salt content present. After cholecystostomy or cholecystectomy the urines usually cleared up within 4 to 6 days.

C. M. ANDERSON.

WEBB, G. B., RYDER, C. T., AND OLCOTT, C. T.: **The Lymph-node Distribution of Experimental Tuberculosis of the Guinea-pig.** *American Review of Tuberculosis*, September, 1922, vi, No. 7, p. 575.

Subcutaneous inoculation of tubercle bacilli in the guinea-pig is followed by early development of lesions in the lymph-nodes of various remote regions of the body, often without any lesions of the areas drained into these nodes being apparent either at the same time or later. The nodes in which lesions have been demonstrated include the inguinals of the side inoculated (primary), inguinals of the other side, iliaes, aortics, axillaries, two groups of cervicals, retrosternals, tracheobronchials, hepatics, mesenterics and ileoceals.

Except in the inguinal nodes primarily involved, and in the bronchial and hepatic nodes, which by their position are particularly subject to cumulative infection, the tendency of these widespread lesions of the lymph-nodes is to reach a rather constant standard, characterized by slight enlargement and moderately extensive caseation, and then to progress no further. Lesions of the nodes draining the intestine (mesenteric and ileocecal) develop a little later, and show



less tendency to become caseous than those of the other nodes examined. Arrest and healing perhaps occur, but have not been proved in these experiments.

Survival of bacilli, in a state of minimal activity, in such remote peripheral nodes, may perhaps account for the persistence of the Pirquet test in adults.

C. A. SCHMID.

KENOE, R. A.: **The Activation of an Enzyme Poisoned by Heavy Metal Salts.** *The Journal of Laboratory and Clinical Medicine*, September, 1922, vii, No. 12, p. 736.

The enzyme in saliva inactivated (coagulated) through the action of the heavy metal salts  $\text{HgCl}_2$  and  $\text{AgNO}_3$  may be reactivated by means of sufficiently high concentrations of certain neutral salts of the alkali and alkaline-earth metals. The degree and rate of reactivation of the coagulated enzyme is affected by the concentration of the coagulant and reactivating salts and by the basic and acid radical of the salt employed as the reactivator. Facts are set forth, indicating the probable protein nature of the enzyme, together with the probability of the formation of various compounds of salts with this protein.

In cases of individuals poisoned by heavy metals, the alkaline salts of sodium and potassium should be administered in large doses and should be maintained in the body up to the limit of tolerance, till such a time as the heavy metal has been excreted from the body.

C. M. ANDERSON.

SALOZ, C., AND GILBERT, R.: **The Evacuation of the Stomach as Determined by the Passage of Barium and the Test Meal.** *Archives des Maladies de l'Appareil Digestif et de la Nutrition*, September, 1922, xii, No. 5, p. 317.

"Dyspepsias are chemical or they are not dyspepsias" said Germain Sée at the time when studies on the gastric juice were the rage. Today, on the contrary, we have almost reached the point of declaring the chemical analysis of the pathology of the stomach.

The object of this study was to determine by comparison with the passage of the opaque meal the accuracy of the method of indirectly measuring the chyme. As a result of these studies, the following conclusions were reached:

(1) The radiographic examination after an opaque meal discloses the motor defects. It gives information concerning the static and dynamic condition of the stomach and permits one to follow the progress of a stenosis.

(2) The total gastric contents, calculated according to the formula of Mathieu and Rémond, gives an index to the motor function of the stomach only in those organic affections which involve the pylorus. The method of making the calculation according to Mathieu and Rémond may be described as follows: One hour after the Ewald meal, withdraw as much of the gastric contents as is possible. Measure the quantity and determine the acidity. Immediately after evacuating the stomach, pour in a known quantity of distilled water. Withdraw the resultant mixture and determine its acidity. From these known factors, the amount of chyme remaining in the stomach after the initial evacuation can easily be determined, and also the total quantity of chyme in the stomach at the time of the introduction of the stomach tube. The volume of the contents thus determined may normally reach as high as 150 c. c.

No matter what the nature of the disturbance at the pyloric sphincter, the results obtained from the radiographic examination and the determination of the total gastric contents are in accord. In one respect, the Ewald test meal is the more valuable in that it does not point to purely physiological reflexes but indicates the quality of the secretions and the motor function of the stomach wall, and it deals with the habitual state of the patient insofar as the emptying of the stomach is concerned.

(3) The practice of simultaneously employing both methods is the procedure of choice, inasmuch as it permits one to take cognizance of the different exogenous and endogenous factors influencing the evacuation of the stomach.

H. M. FEINBLATT.



KOLMER, J. A., AND OGAWA, L.: **Experimental Tuberculous Pleuritis as an Aid to Chemotherapeutic Investigations in Tuberculosis.** *American Review of Tuberculosis*, August, 1922, vi, No. 6, p. 437.

For chemotherapeutic investigations in bacterial infections, localized are better than generalized infections for the study of medicaments possessing but a slight margin between toxic and curative doses.

For chemotherapeutic investigations in tuberculosis, it is recommended that experimental tuberculous pleuritis and pneumonitis be employed as a lesion offering more hope for successful therapy than generalized infections.

For the production of experimental tuberculous pleuritis, the animal should be of a species possessing some natural immunity, in order to reduce invasiveness of the bacilli and the development of lesions in distant organs; the cultures should be of moderate rather than high virulence.

Experiments with guinea-pigs, rabbits, dogs and white rats, employing human and bovine strains of tubercle bacilli, have shown that the best lesions largely confined to the site of injection, were produced in rats by bovine bacilli (strain M) and in dogs by human bacilli.

C. A. SCHMID.

## SECTION ON PEDIATRICS

HUTINEL, V.: **Nephritis in Hereditary Infantile Syphilis.** *Archives de Médecine des Enfants*, November, 1922, xxv, No. 11, p. 641.

There are several forms of nephritis seen in hereditary lues in children. The first is the "embryonic" type which has no clinical history but is seen in children born dead. In the first year of life, nephritis in the luetic may show edema, but it is rare as an isolated manifestation of the specific infection. The most interesting forms are seen after the first year. Here we see albumen and casts, blood-cells, and epithelium in the urine, with edema, elevated blood-pressure, vomiting, etc. Acute nephritis is seen often enough in hereditary lues to make it probable that the kidney has been sensitized, and resistance lowered. The improvement in such cases after anti-luetic treatment is a point in favor of their syphilitic origin. The diagnosis is often difficult from the uncertainty of the Wassermann reaction, which may appear only after provocative treatment, or may be consistently absent. Tuberculosis is often associated with lues, and is predominantly glandular at this age. Amyloid disease of the kidney is fairly common in luetic children and is indicated by long-drawn out albuminuria, in abundance, the pallor, the fatigue, the cachectic appearance, and enlargement of the liver without edema. The prognosis is always bad in nephritis in the luetic child; when tuberculosis is associated it is worse, while with amyloid disease it is hopeless.

As to treatment, this should be the same as in any other nephritis. With anasarca and scanty urine, fluids should be limited for 24 hours. Then milk is gradually added, then cereals, pureés, cooked



fruits and carbohydrates. Salt should be almost completely eliminated from the diet as well as nitrogenous elements; this is the base of all treatment. Meanwhile, the syphilis should not be neglected, and here care should be exercised as the kidney is the principal route of elimination of the drugs used. In children who tolerate them well, mercurials may be used in the form of intramuscular injections of the benzoate or the biniodid, or intravenous injections of the cyanide.

Arsenical treatment would seem to be preferable with intravenous injections of novarsenobenzol and intramuscular injections of sulpharsenol. These must be small in dosage and given far apart; the iodids may be given simultaneously with either mercurials or arsenicals. When the disease has become subacute or chronic cure cannot be promised.

W. H. DONNELLY.

BABONNEIX, L., AND DENOYELLE, L.: **Artificial Pneumothorax in the Child.** *Archives de Medecine des Enfants*, October, 1922, p. 599.

The writers found unilateral pulmonary tuberculosis only 12 times out of 280 children studied; of these, 5 had pleural adhesions preventing the institution of pneumothorax, leaving 7 cases where the procedure was tried.

The quantities of gas injected were from 300 to 400 c. c. of nitrogen, repeated every 15 days. In all cases the mediastinum showed a rapid displacement which was considerable, the corresponding half of the diaphragm becoming flat or even concave. Very soon, there appeared thoracic distortions, with retraction of the chest wall and scoliosis.

In 3 cases of the 7, the pneumothorax was soon followed by the appearance of a localized focus of pneumonia on the opposite side, which soon resolved. This seemed to be due to the infection of the other lung by the bacilliferous sputum from the affected lung; to obviate this, the compression should always be slow and progressive to avoid expressing into the bronchi the contents of the tuberculous cavity.

One case showed improvement of the general health but with persistence of bacilli in the sputum; the three others presented excellent local and general results which seemed to persist.

W. H. DONNELLY.

HUTINEL, V.: **Nephritis in Infantile Hereditary Syphilis.** *Archives de Medecine des Enfants*, October, 1922, p. 577.

This is the first installment of a consideration of nephritis in hereditary syphilis and states that, in spite of the supposed rarity of this condition, Miss Quesnier under Hutinel's direction, collected a series of 101 cases from the literature. The only form in which one sees the reactions provoked in the renal tissues by the treponema alone is that seen in stillborn infants, or those dead within a few days of birth.

Later in infancy there is seen an interstitial nephritis with modifications of the epithelium and the glomeruli.

This is in turn followed by a general or partial sclerosis, often with gummatous formations, and almost always epithelial and glomerular reactions. A negative Wassermann reaction causes doubt of luetic infection but does not exclude it. The pathology is considered somewhat fully, but evidently diagnosis and treatment will be taken up in a later article.

W. H. DONNELLY.

GIFFORD, M. F.: **Speech Disorders and Defects.** *Archives de Pediatrics*, January, 1922, xxxvii, p. 305.

The origin of the speech correction department in San Francisco was in 1915, the work now being carried on in several departments. There is provision for individual and class care; training of teachers and workers through university extension classes aided by connection with the department of neuropsychiatry. The practical work is concentrated on the schools, an average visit falling due weekly.

All cases were divided into 4 main heads:

(1) Psychopathies including stammering (spasmodic type); stuttering (repetition type), and cluttering (rapid choppy type of speech).

(2) Sluggish and careless use of the lips and jaw, with resulting unpleasantness of voice.

(3) Sluggishness of articulation, comprehending lisping; word substitutions caused by neuroses, organic oral malformations or general lethargy, all commonly known as "baby talk".



(4) A miscellany which includes aphasia, aphorias of hysterical or laryngeal paralytic origin, and lastly mutism.

The treatment was likewise outlined, the psychopathic types being relieved by encouraging confidences in themselves; development of poise, and augmentation by training in classes of conscious speech mechanism control. Ridicule was carefully avoided and fear overcome, these being basic causes for these disorders. The articular defects depending on hearing were medically examined, and unfavorable cases were drilled in tongue positioning by means of pictures.

Sluggish musculature, post-operative, was overcome by breath and diaphragm control exercises. Social conditions were investigated and relieved, having been found basic etiological factors. All of these diagnoses and treatments were outlined in the frequent psychiatric consultations held.

C. A. WEYMULLER.

FELDMAN, W. M.: **The Nature of the Plantar Reflex in Early Life and the Cause of its Variations.** *American Journal of Diseases of Children*, January, 1922, xxiii, p. 1.

The author has studied 500 cases, opening with a review of the literature on the subject, purposing to test accepted truths and attempting to learn of the localization of the reflexogenetic zone in children. Numerous tables are given showing proof of the statements made, micro-photographs and postmortem findings being included.

The following are the author's conclusions: (1) Plantar flexion of the big toe prevails in infancy, dorsiflexion lacking the significance of adult life.

(2) Circulatory disturbances explain aberrations from adult plantar reflex, rather than imperfect myelination explaining it.

(3) Premature infants have positive Babinski's until 5 to 6 weeks of age because of almost total absence of myelination of the pyramidal tracts.

(4) Malnutrition per se is not an influence on plantar reflex response.

(5) Bilateral plantar flexion is as common in girls as in boys at all ages, but bilateral dorsiflexion is more common in girls than in boys at all ages.

(6) Breast feeding diminishes the incidence of positive Babinski's at early ages, probably due to the presence of a higher percentage of lecithin and lactose enhancing early myelination of the pyramidal tracts (not influential after first month).

(7) Toxic influences of whatever origin have no influence on the conductivity of pyramidal tract fibers.

(8) A bilateral positive Babinski found oftener in subnormal temperatures because skin pallor causes congestion of the internal organs including the spinal cord.

(9) A bilateral positive Babinski commoner in dolichocephalic than in brachycephalic infants, possibly because the inhibitory control is less powerful in the former.

(10) Rickets does not favor positive finding of Babinski.

(11) The passing of positive Babinski has no relation to the age a child walks.

(12) Since the peripheral nerves are imperfectly myelinated at birth, and this imperfection is most marked in the lower motor neurone supplying the flexors, the extension predominance will result in extension as a reaction to excitation.

(13) Early fatigability explains variations in reflex responses elicited at the same examination.

(14) The reflexogenous zone in infancy is very diffuse, the planter reflex occasionally being elicited by stimulation of other areas, the sole having failed to give response on stimulation.

C. A. WEYMULLER.

RICHARDSON, F. H.: **Popularizing the Use of Certified Milk.** *Modern Hospital*, 1922, xix, 241.

It was brought home recently to the members of the Milk Commission of the Medical Society of the County of King, New York, that their whole duty has not been accomplished when they provided the community with a healthful milk, and certified to its healthfulness. They came to feel that they owed it to the community to spread this knowledge much farther than it had ever yet been spread.

There seemed to be two points of special interest in this connection. The first was the fact that the term "Grade A" seemed to most people to imply that the milk they were purchasing was of the



highest grade obtainable; and that "certified," as it could not be better than the best, must be some fancy or specially processed milk that was of use only for a special purpose, such as infant feeding. The second point was the fact that the milk is as a rule paid for separately and not included with other items on a butcher's or grocer's bill; and so its price is a matter of universal knowledge.

The task then seemed to narrow itself down to educating the doctors to use certified milk and to order their patients to use it, not only for babies and for sick people, but for well individuals as well.

The pediatricists, who constitute the majority of the membership of the commission, began to find that, while many or most of their bottle-fed babies were on certified milk, it was almost the rule for their mothers to discontinue its use of themselves as soon as they dared. The most effective argument here proved to be that there was no reason that their children should receive milk of a second class or grade, when they were getting eggs, butter and meats of the highest quality. Occasionally, it was necessary to explain that even though the milk formula was to be boiled, it was none the less desirable to use the cleanest possible milk to begin with; and that boiling, although it could render a living germ harmless by killing it, could not make dirty milk clean or supply a vitamin lacking through age of the product.

In consultation work, a simple recommendation of certified milk, with one or two reasons for its prescribing in the place of so-called "tonic" or "alterative" has usually accomplished two things. Of these, the lesser has been the resultant use for the individual case in question. The greater has been the impression made upon the mind of the family physician of the importance laid by the consultant upon its use, and his determination to recommend it himself as an important part of the treatment of future cases of a similar nature.

The simplest means employed in the lay propaganda consisted in explaining to friends, even though they happened to be patients of other doctors, the advantages inherent in certified milk. Any physician is occasionally asked to recommend a "spring tonic" or "blood purifier." Certified milk, with two or three reasons therefore, constitutes an excellent answer.

The point agreed upon as best suited to bring about an increased consumption of certified milk has been this: That certified milk is

nothing more nor less than milk produced as any decent man or woman would wish to produce it for his family and his guests, if he were himself the owner of one or two cows. What are these matter-of-fact requirements, that any individual would expect to carry out himself.

(1) Cleanliness.—Clean cows, clean udders, clean utensils, clean hands and clean milkers in clean clothes.

(2) Freshness.—Milk to be delivered to the consumer within 24 hours of its production.

(3) Health.—Healthy (non-tuberculous) cows, milked by healthy (non-venereal and non-typhoidal) workers.

(4) Sweet-taste.—The only milk decent enough to be allowed by law to be sold without processing or other things which alters the taste.

If there is no one of these points which a parent would not consider a minimum requirement which he or she would be willing to dispense with, then a product which fails in any one of these is not a fitting food to be used on the home table.

BROWN, E. W., AND BOSWORTH, A.: **Studies on Infant Feeding. XVI. A Bacteriologic Study of the Feces and the Food of Normal Babies Receiving Breast Milk.** *American Journal of Diseases of Children*, 1922, xxiii, p. 243.

Since the research laboratories of Boston Floating Hospital offer unusual opportunities to parallel metabolic work on infant feeding with bacteriologic research, the following research was undertaken on the study of the intestinal flora of infants. To complete works on the branch of bacteriology, this comprehends the investigation of maternal milk bacteriology and culture of the skin area around the nipple, in an attempt to account for intestinal bacteria found.

Sixty-five specimens from 38 normal babies from 2 to 6 months of age, (28 breast fed infants and 10 mixed fed) were taken on admission and at the end of the metabolism period; the babies were all breast-fed from admission to discharge; the bacteriologic routine includes rectal tube specimens, which were smeared directly, were emulsified in saline and aerobically cultured on ends and later carbohydrate media, anaerobically cultured on dextrose and lactose agar



by Stitt's method. The organisms predominatingly found on direct smear in the feces was bacillus-bifidus, that from the skin of the nipple and in breast-milk was an organism considered the aerobic form of bacillus bifidus, it was a pleo-morphed "Bifidus like" bacillus, slender, Gram-positive, occasionally spore-forming, seemingly identical with Bacilli bifidus in anaërobic second generation culture, fermenting dextrose, saccharose, lactose, maltose, raffinose and mahnite without gas formation and clotting milk slightly. A complete tabulation of the findings was given, the conclusions of the authors being:

(A) Bacteriology of Normal Breast-fed Stools:

(1) Direct smears from breast-fed babies stools predominate in bifidus groups, cocci and Gram-negative organisms present in small numbers. Altered in abnormal physiologic conditions.

(2) Artificially fed babies for a few days, may still show it bacteriologically after 4 weeks, though, subsequently, exclusively breast-fed, over-presence of cocci and Gram-negative bacilli was criterion.

(3) If a cow's milk formula is used before third day and breast subsequently, fecal type is that of normal nursing.

(4) Bacillus bifidus is dominant living type of organism in normal breast-fed babies.

(5) Anaërobic cultures of breast-feds were predominantly colon aerogenes group, varying with abnormal physiologic conditions.

(6) Anaërobic cultures and direct smear types of bacillus bifidus closely paralleled.

(7) Anaërobic culture seems most valuable, check of aërobes for pathogens highly important.

(B) Bacteriology of Breast Milk:

(1) Findings of drawn breast milk inconclusive, no relationship between fecal and milk bacteria established, but case of contamination demonstrated.

(2) Continuous breast-milk ingestion gives typical, monotonous fecal flora.

(3) Staphylococci and a lactic acid bacillus typical of bacillus bifidus may frequently be present in breast-milk straight from breast.

(4) Authors term "bifidus like" bacillus from around nipple and in breast-milk, bacillus bifidus, and believe it an important source of bifidus organisms in nurslings' intestines.

C. A. WEYMULLER.

SHANNON, W. R.: **Neuropathic Manifestations in Infants and Children as a Result of Anaphylactic Reaction to Foods Contained in Their Dietary.** *American Journal of Diseases of Children*, July, 1922, xxiv, p. 89.

The author summarizes 8 cases showing marked evidences of the presence of so-called neuropathic diatheses as seen in infants and children. In 4, evidence of the exudative diathesis likewise present, one other having a similar past history. Cutaneous tests for protein sensitizations present in all cases. All of the cases showed definite relief from nervous symptoms on the institution of specific therapy directed at the offending proteins. In all but one case the proteins were contained in the dietaries of the patient. In one case nervous symptoms could be relieved or brought on by the exclusion from or the addition to the diet of the food to which the patient was sensitive.

The author concludes that: (1) Many of the symptoms of the neuropathic diathesis in infants and children are not infrequently the result of irritation of the nervous system resulting from anaphylactic reactions to food proteins to which the patient has become sensitized. It is recognized that any protein to which the patient is sensitized might also be causative.

(2) The frequent association of the exudative and neuropathic diathesis in infancy and childhood is, therefore, something more than accidental, the presence of each frequently being attributable to the same cause.

C. A. WEYMULLER.

FABER, H. K.: **Food Requirements in New-born Infants. A Study of Spontaneous Intake.** *American Journal of Diseases of Children*, July, 1922, xxiv, p. 56.

The purpose of the paper is to show the intake of food, as energy, when the appetite of the infant is the only controlling factor, and to relate the values found with weight and rate of gain, and with the values previously determined by other methods.

The metabolic measurements of Benedict and Talbot showing a basal rate of about 44 calories per kilogram, an estimated average



total metabolism, exclusive of growth of 62 calories, and an additional 15 calories, allowing for growth, were contrasted with Heubner's total figure of 100 calories per kilogram per day. The discrepancy was pointed out as more apparent than real, since the findings of the first week could not be applied to each day of that week.

The author reports 85 cases with weight curves and formulae, showing that the appetite as an index to the needs of the new-born infants will not result in excessive demands, and will avoid a greater initial loss than can be accounted for by mechanical factors, and will sustain the rate of gain previously established for health of infants in the same community. The demands of the infant for food exceed the basal requirements on the second day, equal the average total requirements of Benedict and Talbot on the third day; rise on the fifth day to the Heubner optimum of 100 calories, and thereafter rise slowly to about 115 calories near the end of the second week. The author suggests a scheme of feeding for the apportionment of the intake for the period from the fifth to the twelfth day, netting 87 to 123 calories per kilogram as the maximum caloric need.

Warning is given that the feeding methods described are not advocated for general use with breast fed infants, and that a period of partial starvation during the first week or two is useful or even necessary in the conservation or increase of mammary secretions.

Full tables and graphs in illustration of the work done are included.

C. A. WEYMULLER.

DANIELS, A. L.: Can Yeast Be Used as a Source of Anti-neuritic Vitamine in Infant Feeding? *American Journal of Diseases of Children*, January, 1922, xxiii, p. 41.

Since there is remarkable lack of anti-neuritic vitamine in the average diet, and even more in cow's milk dilutions, and since the giving of large amounts of orange juice, tomato juice, vegetable soups frequently resulted in digestive disturbances it was thought advisable to test the availability of yeast. Since yeast was found to satisfactorily furnish anti-neuritic vitamine in animal experimentation, and wheat embryo or pancreatic extract preparations became too expensive, it was further urged for trial. Sixteen apparently normal

babies having good digestive histories were tested with from 2 to 10 grams of air dried, pulverized yeast which had been boiled and dissolved, the solution being added to the formula. The babies had shown stationary weights on correctly prescribed and administered diets. In many of the cases diarrhea supervened, there was no gain in weight, and cases of furunculosis so treated were not benefitted.

The authors conclude that yeast should not be used as a source of the anti-neuritic vitamine.

C. A. WEYMULLER.

HERRMAN, C.: A Case of Dwarfism with Congenital Heart Disease.  
*Archives of Pediatrics*, 1922, xxxix, 45.

Cases of congenital heart disease with marked dwarfism are comparatively rare. In series of 62 cases only one was associated with dwarfism.

Girl, 13 years of age, parents healthy, youngest of seven children all healthy and of normal physical and mental development. Patient born at full term, small but not cyanotic. Breast-fed for 8 months, began to walk at 2 years. Always small for age. At age of five congenital heart lesion was first recognized. Started school at 6 years now in 7A. Mental development normal. Has not had diseases of childhood. Able to walk long distances without tiring. Appetite fair and bowels regular. Has not begun to menstruate. Weight 49.5 pounds, height 48.5 inches, circumference of head 20 inches, chest, 23.5 inches, abdomen, 21 inches, length of upper extremity, 21 inches, lower extremity, 28 inches. Patient not cyanotic, fingers not clubbed, hands cool. Lungs normal. Enlargement of heart especially to right, and an increased area of dullness in the second intercostal space to the left of the sternum. Loud systolic murmur heard over entire cardiac area. X-ray shows enlargement of heart to right especially, the ossification centers are apparently normal. Blood, 90 per cent hemoglobin and 6,136,000 red cells.

Although the physical examination shows no lesions in other organs it is not unlikely that some other factor possibly some other congenital anomaly is responsible for the marked retardation in growth.



BRUCE, J. W., AND GRAVES, S.: **Respiratory Obstruction Resulting in Death.** *American Journal Diseases of Children*, May, 1922, xxiii, p. 441.

The patient was a boy, aged 4 months. His family history was negative. He had had rhinitis two or three times. The labor had been normal. His illness dated from the day after his birth when his mother noticed that his breathing was more noisy than normal. He was not cyanotic and did not seem to be in distress. The noisy breathing became more and more pronounced. He had been cyanotic only once when he seemed to strangle. His appetite was good. Breathing was always more difficult after a meal or when crying. On examination the chest was seen to be well formed, not at all "barrel-shaped"; no abnormality of bony structure. Both inspiration and expiration are labored. There is a loud stridor. Percussion is normal, except over the vertebral area where dullness extends to the sixth dorsal vertebra. Breath sounds are normal, except over the area of dullness in the back where they are harsh. Roentgenograms of chest show no abnormality. The diagnosis was enlarged thymus. The baby was given roentgen ray applications at one week intervals for four weeks. For forty-eight hours after each treatment his condition was decidedly worse, the stridor being more pronounced and the breathing more difficult, and he was slightly cyanotic. He then returned to his previous condition. He was not benefitted by the roentgen ray treatment. He never had any gastro-intestinal disturbance. At times he had great difficulty in swallowing his food and had to be fed with a stomach tube. The first time a stomach tube was used (No. 22 soft rubber catheter) respirations were completely blocked and no air could pass in or out. He became cyanotic and the tube had to be withdrawn immediately. Later a small tube (No. 15) was used and while it increased the dyspnea it was possible to feed the patient in this way. The stridor was worse when he was excited or after being fed; at these times it could easily be heard 75 feet away. About one week before his death the respiratory difficulty became worse. He was now slightly cyanotic all the time. As he was more comfortable in a semirecumbent posture he was kept propped up night and day. He could not swallow the milk without aspirating some of it and having a violent coughing spell. When the small catheter was passed into his stomach, the respirations were

dangerously obstructed. About 48 hours before his death a roentgen-ray treatment was given, and shortly after this, his symptoms became greatly aggravated and continued so until his death. The necropsy revealed nothing remarkable except malnutrition and the unusual shape and location of the thymus. As compared with the appearance in other children the thymus appeared to be higher than usual and presented the larger extremity cephalad instead of caudad. The history of stridor, beginning soon after birth and continuing uninterruptedly until death, rules out any cause which would produce spasm of the laryngeal muscles such as spasmophilia or croup. These conditions are practically never seen in infants of this age. There is a great deal in the case to suggest congenital laryngeal stridor, *i. e.*, it was noticed soon after birth and continued until the end. However, there are points which make this diagnosis impossible. In the first place, death in these cases is always caused by intercurrent disease or respiratory infection, which was not present in the case under discussion. In the second place, the stridor of congenital laryngeal stridor in this case was both inspiratory and expiratory and if anything expiration was a little louder than inspiration. The post-mortem appearance of the larynx was normal. The d'Espine sign, being positive, the author expected to find tuberculous glands about the hilus or an enlarged thymus. There were no enlarged or tuberculous glands. The shape and position of the thymus are worthy of consideration. The author has passed a No. 22 catheter on many other babies of the same age and never observed respiratory distress in any other case. It seems logical to believe, therefore, that even a 3 gm. thymus if located in this narrow aperture (the superior thoracic inlet) could cause tracheal obstruction. While it is impossible to state definitely that this was the cause of death, it seems to be the most likely explanation.

**HESS, A. F.: Nutritional Disorders in the Light of Recent Investigation.** *Boston Medical and Surgical Journal*, 1922, clxxxvii, 101.

The discovery of the vitamins disclosed an entirely new group of nutritional factors which are of vital importance for human welfare and existence. Another fact brought out recently, is that food stuffs are not fixed chemical entities, but vary greatly according to the attendant circumstances.



Experimental research has brought out the fact that the nutritional unit requires special recognition in the various life cycles. For instance, the period of active growth requires a certain kind of nutrition; while other particular periods of life require other nutritional units. These differences are not merely quantitative to be calculated according to variations in body weight, but are distinctive for the particular period of life. The period of active growth is almost as distinct from the adult as if it belonged to a different species.

The main factors which determine the nutrition of the body are diet, environment and infection. This tried when working hand in hand, or at cross purposes, causes a physiologic or a pathologic state. There is intimate relationship between nutrition and infection. Either can result in secondary involvement by the other, and it is hard to tell sometimes which is primary. Further, infection may be accompanied without any rise of temperature; especially is this possible where the individual has been recognized.

The third factor, that of environment, includes the air we breathe, atmospheric conditions, our shelter, clothing and many other apparently trivial factors connected with daily life. A most important factor is a proper amount of sunlight in the homes as has been illustrated by the sun-treatment for the cure of tuberculosis. It has even been proved by animal experimentation that the sun's rays are able to prevent or to cure rickets.

Furthermore the effect of atmosphere, both in and out of doors, includes factors not sufficiently considered at the present time, and the season affects the growth of individuals markedly probably associated with some seasonal variation in metabolism. The climate exerts a dominant note in our nutritional state.

SECTION ON  
ROENTGENOLOGY AND ELECTRO-  
THERAPEUTICS

HESS, A. F., UNGER, L. J., AND STEINER, J. M.: **Experimental Rickets in Rats. VIII. The Effect of Roentgen Rays.** *The Journal of Experimental Medicine*, 1922, xxxvi, No. 4, p. 447.

In view of the fact that the rays of the sun, of the mercury vapor lamp, and of the carbon arc lamp are able to protect rats from rickets, it seemed worth while to test the protective value of soft roentgen rays. The only previous report bearing upon this subject is that of Hultschinsky, who treated a three-year old rachitic child with rays from a tube having a hardness of  $2.5^{\circ}$  to  $3^{\circ}$  W., and observed calcification after 18 irradiations in the course of two months.

In these experiments, all of the animals fed a ricket-producing diet developed rickets in spite of the irradiation. This failure came about when the duration of the exposure was fifteen minutes, and the distance of the Coolidge tube 8 inches, as well as when the period was shortened to 2 minutes and the tube was placed at a distance of 3 feet. A three-fourth inch spark-gap, 15 milliamperes, and a universal Coolidge tube without filtration were used. The radiographs of the epiphyses at the knee-joint showed the changes typical of the rickets which comes about on this diet. This was likewise true of the histological sections.

In addition to these preventive tests, a series of rats was subjected to massive doses of roentgen rays, with the object of possibly damaging the cells to such an extent as to lead to the development of rickets. Many of the French writers, and especially Marfan, have



held the opinion that changes in the bone marrow are of primary importance in the pathogenesis of rickets. In these experiments, rats on a diet containing phosphorus in an amount adequate to prevent rickets were not rendered rachitic by exposure to massive doses of x-rays of an intensity sufficient to produce marked destruction of the blood-forming cells of the marrow.

H. M. FEINBLATT.

SEITZ, L.: The Roentgen Ray Treatment of Carcinoma of the Uterus. *Klinische Wochenschrift*, 1922, i, No. 15, 741.

That the radioactive substances radium and mesothorium can bring about the disappearance of carcinomatous tissue, has remained since the first experiments incontestable. But the rays are no longer able with the stationary quantity of 50 to 100 mg. of the element radium on hand to destroy carcinoma cells at a distance farther than 3 to 4 cm. from the tube. Hence the radium treatment can be only a close up treatment. In the roentgen tubes we have a hundred times more productive source of rays. The best deep therapy apparatus furnished rays which, with their hardest components, reach almost the x-rays of radium. The author treated a series of patients with roentgen alone and with roentgen-radium treatment. After a 2 years' observation period, the results were almost equal. With combined roentgen-radium treatment, 56 per cent lived after two years, with roentgen treatment alone 53 per cent. Of 53 ray-treated cases, most of which were roentgen treated cervix carcinomas, 12 or 20.7 per cent were living after 5 years, results which concur with those of extensive radical operations. A great many statistics are offered concerning postoperative rayings, with which a diminution of recurrences is obtained. The author gives a full carcinoma dose in after-raying.

BUCKSTEIN, J.: The Importance of Roentgen Ray Localization of the Intestinal Tube. *New York Medical Journal*, June 7, 1922, cxv, No. 11, p. 690.

Various methods recommended for determining the location of the

intestinal tube beyond the stomach are, with the exception of the x-ray, at best highly suggestive, and may be misleading.

Even the aspiration of duodenal fluid, while acceptable as a rule, may occasionally prove unreliable. The x-ray is essential for accurate determination of the exact area from which intestinal fluid for study has been obtained, and also for the exact point of entry of medication and of food. The x-ray will often help to determine the cause of obstruction in the course of the tube.

J. ROSE.

CHERRY, T. H.: **The Uses of Radium in Gynecology.** *New York Medical Journal*, July 5, 1922, cxv, No. 1, p. 6.

Radium in the early cases of carcinoma of the cervix is considered the treatment of choice rather than surgery. In the treatment of inoperable cancer and in the recurrences, the patient's life may be prolonged and made more comfortable by the elimination of local symptoms and the lessening of absorption of toxic products. All patients with cancer desiring radium should first be tested for the kidney function, hemoglobin and red cell count if found low, or if the blood chemistry shows high nitrogenous retention, radium is contraindicated until their condition improves. All patients with uterine hemorrhages at or near the menopause, not due to uterine fundal cancer, are readily cured by radium application. Fibromyomata in patients whose general condition contraindicates an operation, can be treated by radium and good results expected. The benign condition of the vulva and vagina shows excellent results following radium treatment.

J. ROSE.

WILLIUS, F. A.: **Electro-cardiography and Prognosis. I. Significant T-wave Negativity in Isolated and Combined Derivations of the Electro-cardiogram.** *Archives of Internal Medicine*, October, 1922, xxx, No. 4, p. 434.

Willius has previously reported some figures tending to show the serious prognostic import of electrocardiographic tracings showing



certain aberrations of the QRS complex in all Leads. The present paper amplifies this report and deals also with the significance of the presence of a negative T-wave in certain of the Leads. As is well known, a negative T-wave in Lead III is of no significance. Willius believes that a negative T-wave in Lead I, Leads I and II, II and III or in all Leads is a very serious sign. This study comprises an analysis of 449 cases covering a period of 5½ years, all of which showed some of these anomalies. The present condition of these patients was ascertained by follow-up letters, and each group is compared with a so-called control group which consisted of a like number of patients suffering from as nearly identical conditions as could be found, but failing to show the anomalies mentioned.

The group showing negativity in Lead I, presented a mortality of 63.4 per cent. In the control group the mortality was 26.8 per cent. The group showing negativity in Leads I and II presents a mortality of 65.3 per cent. In the control group the mortality was 17.5 per cent. The group showing negativity in Leads II and III presented a mortality of 32.2 per cent, and in the control group the mortality was 20 per cent. In the group showing negativity in Leads I, II and III the mortality was 62.5 per cent and in the control group the mortality was 20.5 per cent.

The aberrations of QRS complex which Willius includes consist of notching of the apex, ascending or descending limb, or a width greater than 0.10 second, these aberrations occurring in all the Leads. Patients showing these changes in addition to T-wave negativity (excepting in Lead III alone) formed a group, the mortality of which was 86.7 per cent, the mortality of the control group being only 26.3 per cent.

T. HOWARD.

## SECTION ON NEUROLOGY AND PSYCHIATRY

MATHIEU, P.: **L'Obesite Hypophysaire.** *La Vie Medicale*, 1922, ii, 263.

The extract of the dried posterior lobe or the entire hypophysis is given in doses of 0.10 to 0.40 centigrams per day. Thyroid extract, according to the accessory symptoms is added, in doses of 2 to 20 centigrams, per day, or of ovarian extract, twenty to fifty centigrams per day. Sometimes small doses of suprarenal or thymus may be added. Physical exercise is generally not well tolerated, and is not of much use. Ergotherapy, according to Bergonio was of good success. In hypophyseal tumors radiotherapy has given relief of the symptoms, and decrease of obesity.

ZONDEK, H.: **Treatment of Endocrine Obesity** (Die Behandlung der endokrinen Fettsucht.) *Klinische Wochenschrift*, 1922, 1, 999.

Generally it is the insufficient function of the endocrines, especially the thyroid and the hypophysis, which will cause the endocrine obesity. The malfunction of the pancreas, adrenals, etc. is not as important as a causative function. Von Noorden is of the opinion that all types are derived from the thyroid. As compared with mastobesity, the calori amount does not explain it, this is especially true of the hypophyseal type. The nervous system causes the fat to locate at certain points above the mons veneris, the buttocks, the breasts, in endocrine obesity. These parts are not accessible in the same manner, as are others, for the combustion.



Generally these patients react very slightly to the general dietetic measures. Decrease of calories alone does not improve these cases, however, restrictions must be made, by all means. Combustion must be favored, and metabolism kept on its height. In the thyroid and genital types the oxidation must be encouraged. In dystrophia adiposogenitalis and lipomatosis the influence of organotherapy is not marked. The thyroid preparations are those which are mostly used to increase combustion. Of this group of remedies, thyroidin seems the most useful. In form of a powder 0.2 to 0.6 grams a day are administered. Loss of weight is accomplished by this, especially in myxedemas of thyroid insufficiency. When excitability sets in the remedy must be discontinued, in order to avoid rapid fall of weight. Often patients will lose 20, 30, or 40 pounds in a few weeks or months. If that is the case thyroid insufficiency is practically proven. Thyroidin is useful, also, in genital cases, but rarely in hypophyseal. In lipomatosis it has no effect.

Thyroglandol and thyroopton contain some iodine, which is however, much changed, as the commercial preparation is fluid. Even when given subcutaneously or intramuscularly, they do not increase metabolism. Glandulae thyroidea Merck or thyroglobulin tablets, according to the author's experience, are not as effective.

Ovarian and hypophyseal extracts have been used in genital obesity. Hypophysin had often proven of good effect upon metabolism, while oopherin, three times 1 to 2 tablets, or ovoglandol combined with ferrum, have not been as effective. In some cases hypophysin, three times, 3 tablets, or glanduitrin, or hypophysia cerebri siccum have been effective.

Where tumors are the cause of obesity, the operative removal is indicated. It is, however, a serious operation. The author has had some good results, regarding the pressure and the hypertension, more than the obesity, with intranasal curettement of the tumor. Whether the treatment may some day be radiological, must be proven. Teratoma, glioma, and sarcoma, are not overcome by it.

In woman the implantation of the ovary of a healthy ovary, from a mature woman, in whom the sexual functions are intact may overcome genital obesity. Zondek saw a case, which has not been published, in whom this procedure was of good effect. Her ovaries had been removed, years ago, and she suffered very much from obesity, heat, etc.

BOUCHUT, L., AND FRANCOLIN, P.: **Paresis of the Left Half of the Diaphragm in Gastric Ulcer.** *Archives des Maladies de l'Appareil et de la Nutrition*, January, 1922, xii, No. 1, p. 9.

Paralysis of the diaphragm is an unusual observation. An Italian author, N. Samaja, recently collected 46 cases from the literature, of which 16 were verified by autopsy. In 30 the diagnosis was made by the fluoroscope. The paresis involves the left half of the diaphragm almost exclusively. This condition must be differentiated from diaphragmatic hernia, which is very frequent, particularly since the late war, and in which there is a loss of the continuity of the muscle, through which gap the viscera protrude into the thorax. In hemiparesis, the muscle fibers are not interrupted, but the diaphragm loses its tonus and allows itself to be pushed by the abdominal contents into the thorax along with the stomach and intestine. The fluoroscopic picture is very characteristic. The left diaphragm looks like a slender line with a more or less accentuated curvature, the peak of which reaches the fourth or even the third rib. Below, filling in the lower third of the thorax, are the greater curvature of the stomach and the splenic flexure of the colon. This ascension causes a deviation of the heart, which is pushed over to the right and occupies a place in the median line.

Clinically, hemiparesis of the diaphragm is often latent. On the other hand, there may be a rich symptomatology, often giving rise to error, because of the presence of signs pointing to hydrothorax.

The condition may be congenital or acquired. Congenital atrophy, in which a leaflet of the diaphragm was greatly attenuated and almost devoid of muscle fibers, has been described. Acquired diaphragmatic paralysis is more frequent. Occasionally, it is due to an injury involving the phrenic nerve. More often it is due to pleural inflammation extending to the subjacent muscle, old wounds of the pleura, and antecedent pleurisy or tuberculosis making traction upon the diaphragm and holding it in this elevated position.

The authors describe 4 cases showing left hemiparesis of the diaphragm. In each instance, complete examination disclosed no nervous, pleural, or pulmonary lesion, but instead, an ulcer of the lesser curvature of the stomach, which was verified either at operation or by finding a typical shadow. The ulcers found at laparotomy were old and sclerosed and infiltrated surrounding tissues; some of



them were accompanied by considerable perigastritis. Such ulcers cannot proceed far without giving rise to a subinflammatory state which is capable of crossing the peritoneum and attacking the diaphragm. First the muscle is paralyzed, then a myositis, gradually passing into sclerosis, develops.

H. M. FEINBLATT.

YOUNG, J. K.: **Orthopedic Significance of Backache.** *New York Medical Journal*, 1922, cxv, 480.

Pain in the back is a constant symptom in many orthopedic conditions, and it is often the first symptom which compels the patient to seek medical aid. Among the simplest functional conditions which the orthopedic surgeon treats are pain and backache due to inequality of the lower extremities. This tilting of the pelvis produces a strain on the back, particularly in the lumbar region, resulting in pain which is quickly relieved by equalization of the limbs. Many individuals complain of backache, particularly lumbar in character, the cause of which may be traced to faulty poise. Backaches may be due to the lordosis following rickets, or resulting from gastropnoia and particularly enteropnoia during and subsequent to pregnancy and in obesity. In this category belong the backaches, which result from faulty poise produced by flat foot, and the artificial equinus produced by modern high-heeled shoes. In the milder forms of scoliosis, backache is not a very pronounced symptom, the pain usually being confined to the neck and the occipital region. In the severe forms of scoliosis pain in the back and the costal nerves is a frequent symptom from pressure of the ribs against the ilium and from intercostal pressure. This is relieved by correction of the curvature. Traumatic scoliosis is always accompanied by pain in the displaced and bruised muscles. Among the congenital defects which produce backache are the irregular ossification of the lumbar and sacral vertebrae. The deformity known as sacralization of the fifth lumbar vertebrae not infrequently produces backache in the lumbar region. Following fractures of the lower lumbar vertebrae, particularly the fifth, lateral curvature develops, which adds to the disability and backache. The symptoms of fracture of the transverse process include local tenderness over the seat of the fracture, pain on rising or sitting down, as well as local pain, muscular rigidity to avoid pain on motion, limita-

tion of motion, scoliosis and pressure pains. Direct traumatism of the spine, with sprain, fracture or avulsion of ligaments occurs in accidents and in some instances the deposits in the spine following these accidents from periosteal overgrowth, have been diagnosed as malignant disease until the true nature of the disease was recognized. The same is true of sacro-iliac strain and sacro-iliac displacement, accompanied by pain, local in character, over the sacroiliac synchondrosis, but more particularly referred down the sciatic nerve from direct pressure of the articulation upon the lumbar plexus. A rare deformity of the spine which occurs more frequently than is supposed is lateral deviation of the spine. Following strain the spine inclines to one side and remains fixed and painful unless relieved by appropriate treatment. Backache is a frequent symptom of tuberculosis of the spine after the disease has developed. In the early stages the pain is referred to the distribution of the nerves so that backache is not such a constant symptom, but later when deformity occurs and abscesses complicate the condition, backache is a very frequent symptom. Later, when a complicating lordosis develops pain from muscle fatigue and strain is present. In tuberculosis of the sacrum, or of the sacro-iliac synchondrosis, pain, local in character is always present from the beginning to the end of the affection.

In the more rapidly destructive forms of osteomyelitis of the spine such as pneumococcic and streptococcic infections, local pain over the necrotic areas is constantly present, while in osteomyelitis specific in character, nocturnal pain is the rule. Actinomycosis is exceedingly rare. In it the scapular abscess is painful during its slow formation, and when the vertebræ become involved, pain localized over the affected area is always present. Of all the painful affections, malignant disease of the spine is most excruciating and persisting. Pain is localized over the affected area, but following the extension of the disease pressure pain adds its terrors to the agony produced by the pressure of the malignant growth.

**JAQUET, A.: On Nervous and Psychic Disturbances in Heart Diseases**  
(Ueber nervöse und psychische Störungen bei Herzkranken).  
*Schweizerische medizinische Wochenschrifte*, 1922, lii, 245.

In patients with heart disease the psychic symptoms will very frequently govern the entire clinical picture. According to Lilien-



stein, only 25 to 30 per cent of patients with heart disease are free from nervous symptoms, and if one restricts this evaluation to decompensation, only 10 per cent are found exempt. Headache is very frequently observed. The type of headache varies; it may amount only to pressure and keep the patient from work, sometimes it is definite pain, localized in the forehead, vertex, or occipital region. The frontal headache rather predominates. The pain may be periodic, or may go on to habitual headache. Sleep is very often interrupted. The irregular function of the heart may keep the patient from sleeping. They felt the carotid beating, or had buzzing in the ears, or the cardiac action may occasion general restlessness. Often cold feet will be the cause, even a warming bottle will not suffice to induce sleep. Often narcotics are of no value; while digitalis, either with or without morphin or pantopon, will induce sleep. Dizziness and fainting, likewise, often occur in heart disease. Often it is not dizziness, but a sense of uneasiness and lack of assurance. Very rarely complete unconsciousness occurs. Generally, strength is diminished, and the patients are obliged to seek support. Similar appearances occur in arteriosclerosis. Often it is very difficult to know whether the symptoms are apoplectic, but these symptoms are found in young patients who show no changes of the blood-vessels. Probably these disturbances signify a sudden vasomotor condition which will induce anemia of the brain. The author doubts whether one may speak of primary heart weakness. However, one should never give the patient this explanation, because it may lead to psychic disturbances. The sensation of cold and cyanosis of the extremities must also be considered vasomotor disturbances. Patients will want a warming bottle in mid-summer. The author does not, however, think that the transitory disturbances of sensibility and motility, which are observed in cardiac patients, are due to vasomotor disturbances. Sometimes anesthesia of one or more extremities or of half of the body, will last for a short time. Still more frequent are paraesthesia, the sensation of animals running on the skin, paresis, or even paralysis may be present for a short time.

One of the patients said that he would wake at night and find himself incapable of moving hands or feet. After a few minutes, the disturbance would disappear. If these symptoms occur in older persons, would have to consider arteriosclerosis and apoplexy. Often patients complain of pain near the heart, and sensitive points may

be found in the wall of the thorax, and often on the level of the second to fifth dorsal spinous processes, pain will be felt at certain points near the spinal column. Patients generally complain that their capacity to work has decreased. Fatigue is the same in physical as well as in mental exertion. They complain of loss of memory and lack of concentration.

One of the main features is the change in character. Good natured people will become irritable and obstinate, they will become dissatisfied and cannot bear opposition. Other patients become nervous, restless, are excited about small causes, are inconsistent, cannot stay in bed after they have lain down, often they become pessimistic. One of the main features is fear; the patient will watch himself closely and be worried about his condition. Much caution must be observed in telling the patient that he suffers from arteriosclerosis or cardiac weakness. Fear is generally associated with palpitation, sense of constriction, dyspnea, labored inspiration, sweating, sensation of chilliness, cold hand and feet, hair standing on end, dryness of lips, gastric disturbances, micturition, etc. Cardiac patients show all these manifestations, especially marked. In some cardiac patients, tachycardia may cause uneasiness, and an extrasystoles may increase fear. True angina pectoris may thus develop in arteriosclerotic patients suffering from renal insufficiency. Most patients with heart disease will connect these sensations with the fear of approaching death. This fear may go on to positive psychosis. Fischer, Goldberger, Bonhoffer, and Jakob have described the intimate connection which exists between heart disease and psychosis. Jakob says that at first there is general emotional irritability, change of moods, loss of memory, and mental fatigue, dizziness, buzzing in the ears, headache, yawning and fainting. When the circulatory disturbances become more marked, delirium and psycho-motor excitability with hallucinations will set in. The psychic reactions to sensory delusions and hallucinations, are violent. The consciousness of these conditions varies. Generally it is very much impaired. Depression becomes very marked and fear dominates. The general impulses are typical and interesting from a forensic standpoint. The impulses may tend to homicide or suicide. Thoughts are slow and mental fatigue marked, therefore these patients are unable to show any spontaneity in their expressions. In severe cases, the psycho-motor excited states occur towards the end. Jakob thinks that the circula-



tory psychoses are caused by insufficient nutrition of the cerebral cortex. The consequence is the disturbance of metabolism in the nervous tissue, that is to say, a chemical reaction. The nervous symptoms are not always as severe as the circulatory disturbances. There may be severe decompensation where there are no nervous symptoms. In other cases nervous symptoms may be well-established where the heart is not severely injured. The author considers the relation between heart disease and psychosis as indirect. The condition of the heart occasions a general sensation of distress and unrest, which will react upon the mode, cause irritability and nervousness in sensitive patients, while less sensitive patients will not suffer from it. Psychosis is relatively rare in cardiac disease considering the great frequency of cardiac disturbances. In many cases, emotional breakdowns, fatigue, arteriosclerosis, and syphilis may have undermined patient's resistance. Saathof is of the opinion that aortitis and valvular lesions are the basis upon which psychosis develops. Certain mental disturbances which develop upon the basis of cerebral arteriosclerosis, will greatly resemble circulatory psychosis. In old age it will be difficult to distinguish between the two. Intoxication, especially medicinal, may cause the out-break. Caffein is one of the main drugs. The author has seen hallucinations, excitability, etc. arise upon giving this remedy. While morphin and opium are effective in the dyspnea which occurs at night, in arteriosclerotic and renal patients, it may happen that an injection of 0.01 morphin or 0.02 pantopon will cause dissociation of ideas. If continued mental disturbances may arise, and it will become necessary to stop morphin medication. Cardiac tonics are efficient only when the patient is perfectly at rest. The efficacy of digitalis is much impaired by depression, nervousness, and restlessness. To counteract the psychic symptoms arising from drugs, cold packs, massage, bromids, valerian, or opium, may be given. Moral encouragement is also necessary. Some patients do better in an institution.

LAREBOULLET, P.: **Infantile Obesity and the Endocrine Glands.** *Paris Medical*, May 6, 1922, xii, 386-392.

Since the first works on myxedema, the tendency to obesity has been mentioned as one of the most usual causes of thyroid insufficiency. The author has followed a large number of cases of obesity

in infancy and adolescence. Although endocrine alterations play an important rôle in the most cases, it is seldom that only a single gland is affected. Obesity is the clinical manifestation of a pluriglandular syndrome. Obesity is nearly always among the symptoms of myxedema fruste. The genital glands usually participate in the affection also. There are fatty deposits on the neck and at the roots of the limbs and the thyroid body is almost completely atrophied.

There are two clear signs of the adipose-genital syndrome of Babinski-Fronhlich:

(1) Obesity, often marked and rapidly progressive, affecting principally the trunk and the roots of the limbs.

(2) The non-development of the genital apparatus.

Often these signs are accompanied by signs of tumor, chiefly ocular signs, with bitemporal hemianopsia and radiographic signs of an enlarged or altered sella turcica. There are also in the child, modification of growth, sometimes nanism, sometimes gigantism, sometimes even acromegaly. Sometimes polyuria or glycosuria complete the clinical picture. When there is thyroid or hypophyseal obesity there is usually simultaneous cessation of genital development. This is not the case in two other varieties of infantile obesity which are more rare. The first is epiphyseal obesity. The fatty excess is not however a fundamental symptom of the clinical syndrome caused by epiphyseal tumors. It may be lacking or appear as a secondary symptom suprarrenal obesity is usually accompanied by a precocious and abnormal development of the genital organs and a generalized hypertrichosis, which distinguish it from thyroid and hypophyseal obesity; the absence of encephalic disturbances suffice to separate it from epiphyseal obesity. Finally there are cases of primary genital obesity. Occasionally, young boys, having had mumps or on account of syphilis or tuberculosis have bilateral testicular atrophy, or they have been accidentally or voluntarily castrated. These and those with cryptorchidism may become obese.

There are of course, other factors in obesity besides the endocrine glands. Excessive alimentation is to blame in many cases, and in the very young child obesity is frequently the function of badly regulated feeding; excessive in frequency and abundance, too rich in bread, sugars in feculents, sometimes in salt. Lack of exercise rarely plays a rôle in the obesity of the child, but it may be an accessory factor. Much more important is the hereditary and familial factor.



Toxins and infections also play a rôle in obesity; tuberculosis, or syphilis may be the direct or indirect cause of obesity. The nervous factor is sometimes essential and not well understood. Obesity often develops after epidemic encephalitis and after hydrocephalus.

Common obesity, in which heredity, lack of exercise and especially feeding are the dominant factors, may it is true, be treated by opotherapy, but before all else, diet and physiotherapy should be recommended. In the glandular obesities, one must first define the diagnosis. The hypophyseal syndrome yields to certain surgical operations, in other cases deep radiotherapy will bring about results. In the absence of neoplasm one may have recourse to antisiphilitic treatment. Opotherapy should be used. In some cases where the endocrine glands do not seem to be the only cause, glandular therapy may be combined with diet and physiotherapy. Thyroid treatment may be used in myxedematous obesity; doses of from 1 to 5 centigrams per day have always seemed sufficient. It is well to commence with very small doses (5 milligrams to a centigram), to increase progressively, and to suspend the treatment periodically (after 10 days for example). It is wise to combine it with other extracts, principally hypophyseal and suprarenal, to render it more easily tolerated as well as to increase its efficacy. The action of hypophyseal extract has been denied, but the author finds it especially efficacious when it is given subcutaneously under the form of injections of the posterior lobe. Ovarian opotherapy is often quite a useful adjuvant to the cure. Testicular opotherapy seems less active. Suprarenal opotherapy finds its indications particularly as an aid to the tolerance of thyroid extract.

GRINKER, J.: **Further Experiences with Phenobarbital (Luminal) in Epilepsy.** *Reprint from Journal American Medical Association, September 2, 1922, lvvix, 788-792.*

**"Conclusions:**

(1) Phenobarbital is the most effective symptomatic remedy in the management of epilepsy.

(2) The best results are obtained in the convulsive types of the disease, both grand mal and petit mal, with effects that are almost specific. The sensory and psychic forms of epilepsy are greatly benefited, if not by cessation then by reduction of seizures.

(3) There has been no mental deterioration from the administration of phenobarbital; on the contrary, patients have become more alert and keen, have lost their unnatural reticence and the fatuous, acne-marked facial expression previously the sign of an epileptic.

(4) Phenobarbital, when taken over many years, neither causes damage to the viscera nor results in habit formation.

(5) Large doses are mainly responsible for the so-called toxic and by-effects.

(6) The art of administering phenobarbital consists in finding a dose suitable to each case without the production of unpleasant by-effects. One should begin with average doses of from  $1\frac{1}{2}$  to 2 grains (0.1 to 0.13 gm.) of phenobarbital daily, and "feel" his way up or down the scale until results are obtained. Large doses should not be resorted to unless the smaller ones prove ineffective; and even then there should be a gradual return to smaller doses.

(7) An indiscriminate use of phenobarbital is fraught with danger and is certain to bring discredit on the most valuable anti-epileptic remedy in our therapeutic armamentarium."

**HORRAX, G.:** A Consideration of the Dermal Versus the Epidermal Cholesteatomas Having their Attachment in the Cerebral Envelopes. *Archives of Neurology and Psychiatry*, September, 1922, viii, No. 3, p. 265.

In a series of approximately 750 verified tumors from the clinic of Dr. Harvey Cushing, there have occurred seven examples of true intracranial cholesteatomas. This paper includes 3 of the cases in which the tumor was found to contain hair. By the term "intracranial cholesteatomas" is understood the definite but rare class of tumors of the intracranial cavity ordinarily referred to as "cholesteatomas" and qualified as "hair-containing" or as "pearly tumors". Tumors of the hypophysis, arising from the remains of Rathke's pouch, sometimes reported as intracranial cholesteatomas because they contain cholesterol crystals, should not be included in this use of the term; nor should the so-called "middle-ear cholesteatomas", since it is still a mooted question as to whether they are originally meningeal growths or whether they result simply from collections of the products of inflammation due to chronic otitis media.



Examples of the dermoid variety have been less commonly reported than those of the epidermoid. The 18 cases found by Bostroem, with 5 subsequently noted, and the 3 here reported, make a total of 26. Of the epidermoids, Bailey accounted for 62 in 1920. In Cushing's series of 750 brain tumors, each type represented 0.4 per cent of all intracranial growths. The favorite situations of the dermal and epidermal cholesteatomas are very similar, their most frequent sites being somewhere near the midline at the base of the brain or in the region of the fourth ventricle.

The first of the 3 cases here reported was that of an army officer, aged 23 years, who complained of headache and convulsions. Following a seizure, he experienced difficulty in speaking and could not remember the proper word. He was disorientated and felt dull. Physical examination revealed almost nothing of significance. The fundi, except for rather full vessels, were negative. The convulsions consisted in an initial drawing of the head to the right, followed by twitchings of both sides of the face, and finally by clonic jerking of first the right arm and right leg, and then of the entire musculature on both sides of the body. Stereoscopic plates of the skull in a left lateral position showed a thin, crescent-shaped shadow of increased density, apparently above and to the left of the sella turcica. At operation, a temporal lobe dermoid cyst was extirpated. Contrary to expectation, the patient did not do well, but remained drowsy and listless. He complained frequently of headache, and bilateral choked disks of two diopters developed. A subtemporal exploration was made through the previous operative site, and the lateral ventricle was punctured. A second cyst, containing hair and debris, was evacuated. Thereafter, the patient made an uneventful and complete recovery.

The second patient was a child aged 3½ years. Two previous operations had disclosed a small extradural abscess containing hair. At operation, an infected, thick-walled dermoid cyst was removed from the right temporal lobe. There was temporary recovery, but the patient died 3 months later. The tumor was about the size of a hen's egg.

The third patient was a child aged 2 years. The complaint was: "Large head". The circumference of the head was 28 inches and had increased 4 inches in 6 months. There was an extreme grade of internal hydrocephalus with intracranial pressure symptoms. There

was persistent lateral nystagmus. The suboccipital region was full, especially on the right. A suboccipital exploration for disclosure of a possible tumor of the cerebellum was done, but no growth was found. The child died 6 days later, and at necropsy a hair-containing cholesteatoma of the under surface of the cerebellum was discovered. The neoplasm measured  $2.4 \times 1 \times 0.8$  cm. It contained, in addition to hair, hair follicles, sebaceous gland cells, fat, and osteoid tissue.

The striking points of similarity between the true dermoid and the non-hair-containing tumors of this class form a strong argument in favor of the congenital origin of the latter from superficial epiblastic cells which do not have the potentiality of the lower layers.

F. DAMRAU.

LAHEY, F. H.: **Parathyroid Deficiency and Its Treatment.** *Boston Medical and Surgical Journal*, 1922, clxxxvii, 170.

In several hundred thyroid operations, the author found the parathyroids were elliptical, clean-cut, brown bodies varying from the size of the head of a match to that of the smallest pea bean; they are soft, with smooth and shiny surface and distinguished from thyroid tissue by being entirely separate from the thyroid, except for delicate connective tissue with small nourishing vessels.

These bodies are suspected of playing a part in epilepsy, myotonia, paralysis agitans, eclampsia, infantile spasmophilia, and tetanic attacks in adults. In the last two mentioned, there is no proven relationship of the parathyroids to these conditions.

Osteomalacia and rickets are bone diseases whose origin has been attributed to parathyroid disturbance. The improper bone development is the result of calcium deficiency, with diminished amount of calcium in the blood and brain. The giving of calcium to humans who have lost their parathyroids is beneficial, and controls the tetanic attacks. However, tetany can be relieved by acid administration, according to Wilson, or by infusion of soluble strontium salts according to Berkeley and Beebe, as well as by calcium salts. Above mentioned bone diseases are not influenced by either calcium or parathyroid extract, so that the relationship as in a previous group becomes equally doubtful.

Parathyroids have been transplanted in a limited number of cases, which have been favorably reported from foreign clinics. These



are done for tetany and it is possible that the remaining parathyroid may have resumed its function.

Symptoms of parathyroid deficiency are first, stiffness and tingling in the hands and feet, followed by spasmodic contractions of the hands and feet, with the fingers in the characteristic accoucheur's position. These attacks pass off in a few minutes. Trousseau's sign, contraction particularly of the fingers and thumb on pressure over the large nerves of the arms Chvostek's sign, a spasm of the face seen on tapping over the trunk of the facial nerve, Erb's sign, increased irritability of the peripheral nerves to weak galvanic currents.

*Treatment.*—All 3 cases reported received prompt relief from calcium lactate and parathyroid extract although one case received no benefit from the extract alone.

Calcium in the form of lactate or chlorid is more dependable, especially given in the form of calcium lactate intravenously for the attacks when prompt relief is sought. The dosage when given by mouth is from 15 to 20 grams of the lactate, provided it does not cause nausea.

It is doubtful if the average commercial parathyroid extract is of value in surgical tetany, and it certainly is of no value elsewhere.

JACOBSON, V. C.: *Parathyroid Lesions in Paralysis Agitans.* *Albany Medical Annals*, 1922, xl, 292.

The parathyroids are necessary to life, since their total removal causes a certain train of symptoms, especially tetany and had been thought to play a part in the production of paralysis agitans. The text-books seem to have discarded the parathyroid hypotheses, since lesions were found in the corpus striatum in this disease.

This report includes the necropsy on a typical case of paralysis agitans, as follows.

A woman, aged 56, had been subject to severe attacks of melancholia about every 5 years for the previous 30. During the previous 15 months, paralysis agitans developed with a very pronounced muscular rigidity, tremor and flexor attitude, the rigidity amounted almost to fixation; there was marked tendency toward retropulsion. Her mental condition was dull and stolid. She suffered from constipation but while in the hospital diarrhea developed with fever; and death occurred with signs of bronchopneumonia.

*Postmortem.*—Besides the pulmonary condition, there was slight chronic thyroiditis; arteriosclerosis; fatty degeneration and infiltration of the parathyroid glands. Three of these glands were found, two posterior to the upper pole of each lateral lobe of the thyroid, and one at the lower pole of the right lobe. They were about the same size, being 6 x 2.5 mms., and brownish red with a faint yellowish tinge. Microscopically they all showed the same changes, but little normal parenchyma, most of the gland epithelium being replaced by fat. The parathyroid elements which remain are heavily infiltrated with large and small droplets. Many cells distended with fat had a nucleus faintly stained or disappeared altogether. Pyknosis of the nucleus was also seen. Mitochondria was found in small numbers and in granular form; the cells containing much fat showed mitochondria few and very small.

McCallum (On the production of Specific Cytolytic Sera for Thyroid and Parathyroid, etc. *Medical News*, 1903, lxxxiii, 827) found experimentally, that there were degenerative changes in the cerebral ganglion cells in parathyroidectomized dogs. Parathyroid feeding has been reported beneficial in cases of paralysis agitans. The writer suggests that the lesion in the parathyroid glands, may have been the primary factor in forming the cerebral lesion and suggested that these glands be investigated in every fatal case of this disease.

JANKELSON, I. R.: **Chronic Fermentative Intestinal Indigestion.** *Boston Medical and Surgical Journal*, 1922, clxviii, 597.

The disease is caused by an overgrowth of bacteria causing fermentation; these bacteria may be normal to the canal or pathogenic. The process is kept up by the germs which thrive on the carbohydrates of the intestinal contents.

*Symptoms.*—May be a fermentative diarrhea; two to six stools daily; stools pasty, rarely watery; light in color and sour odor. The patient complains of meteorism and rumbling, also of heart-burn, palpitation, sense of pressure in epigastrium; at times nausea; vomiting rarely; colicky pain occasionally which is relieved by defecation; lassitude; vertigo, headaches, insomnia, and may be irritable. Later there may be well-pronounced neurasthenia, with nervous disturbances, which have been called by Cohnheim "entereosthenia." It is



necessary to differentiate this secondary type of neurasthenia, as it can be combatted successfully by treating the underlying intestinal indigestion.

*Examination.*—Very few signs are found; the patient may be well nourished, but may be anemic; abdomen usually distended and may be slightly tender on deep pressure, sounds of gurgling in the colon; may find evidence of achylia gastrica, hypermotility, etc. Proctoscopic examination shows moderate reddening of the rectal mucosa and of the sigmoid, and possibly occasional spasticity of the musculature, so much so that the tube may be passed with difficulty. Examination of the feces shows stools light in color, pasty, odor sour, on standing the stool becomes darker, spongy and foul smelling; various undigested vegetables can be recognized in the contents; mucus present in small shreds and small amount. Microscopy shows undigested material and abundant germs; especially numerous *colostridium butyricum*. By addition of iodine, starch is easily detected. The Schmidt fermentation test shows excessive fermentation.

*Treatment.*—An acute attack may be cured in from one to three weeks, but the tendency to recurrence persists for a long time, occasionally for years; these will be due to dietetic errors. Dietetics may include the starvation diet, with only unsweetened tea or brandy allowed, or in mild cases with abstinence from all carbohydrates; in severe cases, the patient is starved from one to three days, especially if it complicates with achylia gastrica. The diet in the milder cases, consists of meat, fish, eggs, butter, bouillon, gelatin, beef juice, and unsweetened tea; this is kept up for 8 to 14 days; the patient is kept in bed for this length of time as well, and the fluids are restricted. The patient is given increasingly larger amounts of carbohydrates as the stools show no free starch. At first, maltose, dextrinized foods, wheat, fine flour, rice, sago, tapioca, stale bread, zwieback and toast are given and well-borne. Milk, and all cellulose, but often months elapse before raw vegetables and fruits may be given. Slow eating and thorough mastication must be insisted upon.

*Drugs.*—At the onset, a brisk cathartic may be given, but once only, as magnesium sulphate; if too much diarrhea, bismuth or calcium, alone or in combination with charcoal. Opium is of distinct harm; atropin relieves spasms and diminished intestinal secretions.

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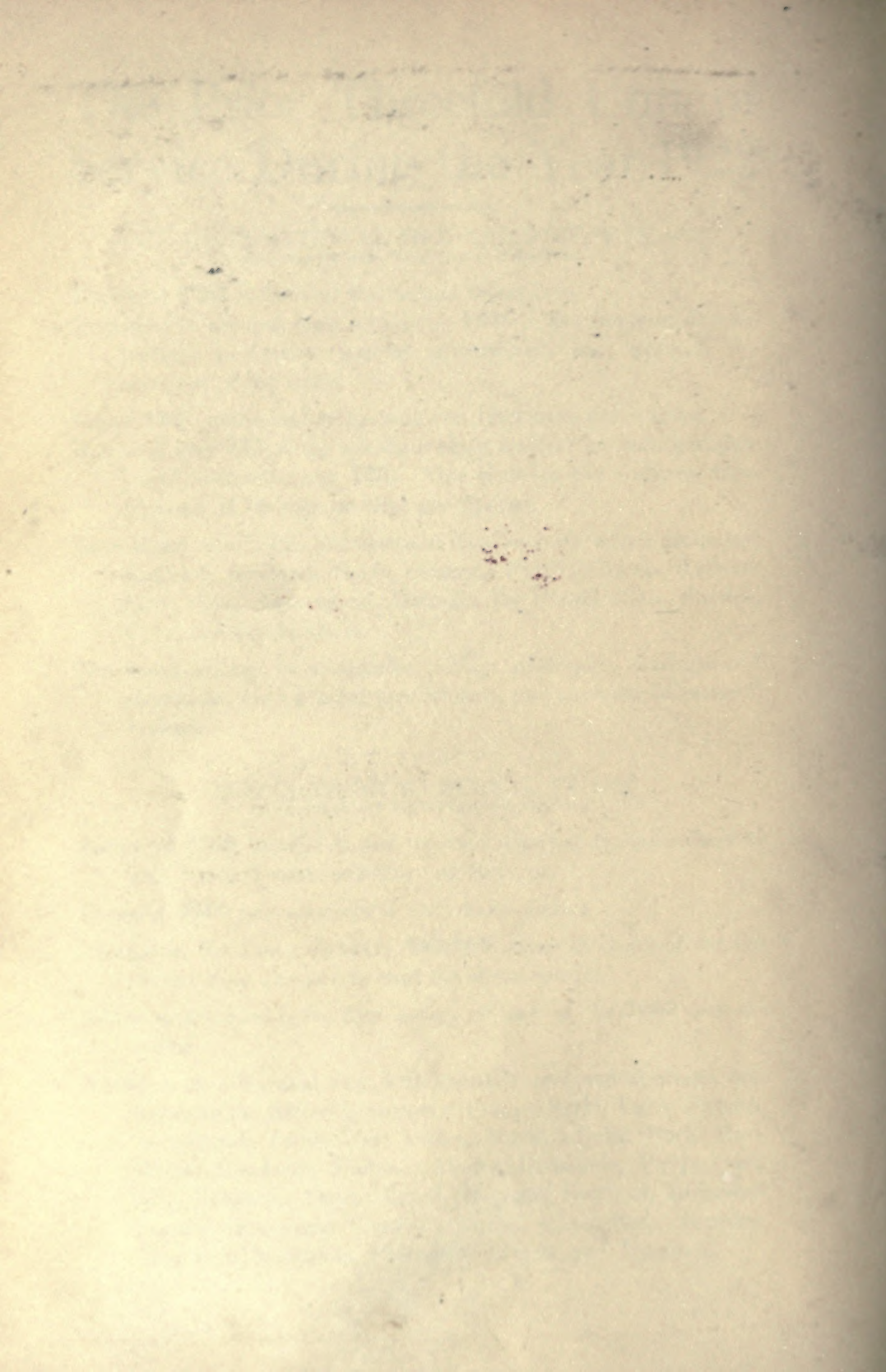
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